100
YEARS 1919~2019
MLYNEDD

of **teaching** and **research**
o **addysgu** ac **ymchwil**

Cardiff University
School of Pharmacy and Pharmaceutical Sciences

Ysgol Fferylliaeth a Gwyddorau Fferyllol
Prifysgol Caerdydd

Briony Hudson

100
YEARS 1919-2019
MLYNEDD
of teaching and research
o addysgu ac ymchwil

FOREWORD

The 2019-20 academic year witnessed the centenary year for the Cardiff School of Pharmacy & Pharmaceutical Sciences, the Welsh School of Pharmacy as it had been known for many decades. It was a year in which we celebrated and reflected upon 100 years of pharmacy education and scholarship that began with the first intake of students in October 1919 to the newly founded Welsh College of Pharmacy.

I am honoured to serve as Head of School at such a significant landmark in the School's history, very meaningful for me as a Cardiff pharmacy graduate of the 1980s, and to have the opportunity to provide a foreword to a book that reflects on the School's evolving 100 year history in the context of the lives of its staff and students, and against the changing landscape of pharmacy education and practice.

University life is a very special, particular but nevertheless shared experience. Browsing through the following pages will evoke many varied personal memories. It will highlight the School's rich legacy of educational, scholarship and research advances achieved over previous decades, and upon which the School's truly world-class reputation has been built. For many, if not all, this book will evoke a strong sense of pride and identity which I reflected on as this book's conclusion (p.141).

To the future; I am inspired by the opportunities for our graduates within the fast changing landscape of pharmacy, as I am for our graduates who will pursue their careers through research. As a School we recognise our huge responsibility in supporting young people, a responsibility very appropriately shared in partnership with our many varied external partners. The story of the Cardiff School of Pharmacy & Pharmaceutical Sciences will continue to evolve for future generations. What is reassuring is that its history so far has been recorded in this book in such an accessible but nevertheless comprehensive manner.

I would like to take this opportunity to acknowledge the many thousands of students, staff and external partners who have contributed across the full breadth of the School's achievements over the many generations, and to maintaining the School's welcoming and vibrant character.

I also express my gratitude to those who have shared their history in the development of this publication and give particular thanks to Briony Hudson, for researching and authoring this book, whose diligence and patience throughout the process was remarkable.

Professor Mark Gumbleton
Head of School

RHAGAIR

Blwyddyn academaidd 2019-20 oedd canmlwyddiant Ysgol Fferylliaeth a Gwyddorau Fferyllol Caerdydd, neu Ysgol Fferylliaeth Cymru fel y'i hadnabuwyd am ddegawdau. Roedd yn flwyddyn i ddathlu ac edrych yn ôl ar gan mlynedd o addysg ac ysgolheictod mewn fferylliaeth a ddechreuodd gyda'r garfan gyntaf o fyfyrwyr ym mis Hydref 1919 pan sefydlwyd Coleg Fferylliaeth Cymru.

Mae'n anrhydedd i mi gael gwasanaethu fel Pennaeth yr Ysgol ar adeg mor bwysig yn ei hanes yr Ysgol, sy'n ystyrlon iawn i mi fel un a raddiodd mewn Fferylliaeth o Gaerdydd yn y 1980au, a chael cyfle i gynnig rhagair i lyfr sy'n edrych yn ôl ar hanes esblygol yr Ysgol dros ganrif yng nghyd-destun bywydau ei staff a'i myfyrwyr, yn erbyn tirwedd newidiol addysg ac arfer mewn fferylliaeth.

Mae bywyd Prifysgol yn arbennig iawn, yn brofiad penodol ond sydd hefyd yn gyffredin. Bydd pori drwy'r tudalennau sy'n dilyn yn ysgogi amrywiaeth o atgofion personol. Bydd yn amlygu gwaddol gwerthfawr yr Ysgol o ddatblygiadau addysgol, ysgolheigaidd ac ymchwil dros y degawdau, sy'n sail ar gyfer enw da gwirioneddol fyd-eang yr Ysgol. I lawer, os nad i bawb, bydd y llyfr yn ysgogi ymdeimlad cryf o falchder a hunaniaeth y bûm i'n myfyrio arno ar ddiwedd y gyfrol (t.141).

At y dyfodol; caf fy ysbrydoli gan y cyfleoedd i'n graddedigion o fewn tirwedd newidiol fferylliaeth, a hefyd i'n graddedigion fydd yn dilyn eu gyrfaoedd drwy ymchwil. Fel ysgol rydym ni'n cydnabod ein cyfrifoldeb enfawr yn cefnogi pobl ifanc, cyfrifoldeb a rennir yn briodol iawn mewn partneriaeth â'n partneriaid allanol niferus. Bydd stori Ysgol Fferylliaeth a Gwyddorau Fferyllol Caerdydd yn parhau i esblygu gyda chenedlaethau'r dyfodol. Yr hyn sy'n galonogol yw bydd yr hanes hyd yma wedi'i gofnodi yn y gyfrol hon mewn modd hygyrch a chynhwysfawr.

Hoffwn fanteisio ar y cyfle i gydnabod y miloedd lawer o fyfyrwyr, staff a phartneriaid allanol sydd wedi cyfrannu ar draws ehangder llwyddiannau'r Ysgol dros genedlaethau lawer, a chynnal cymeriad croesawgar a bywiog yr Ysgol.

Hoffwn fynegi fy niolch hefyd i'r rheini sydd wedi rhannu eu hanes wrth ddatblygu'r cyhoeddiad hwn gan ddiolch yn arbennig i Briony Hudson am ymchwilio ac ysgrifennu'r gyfrol; bu ei diwydrwydd a'i hamynedd drwy gydol y broses yn rhyfeddol.

Yr Athro Mark Gumbleton
Pennaeth yr Ysgol

CHAPTER **ONE**

1

“The ignorance of the pharmacists”

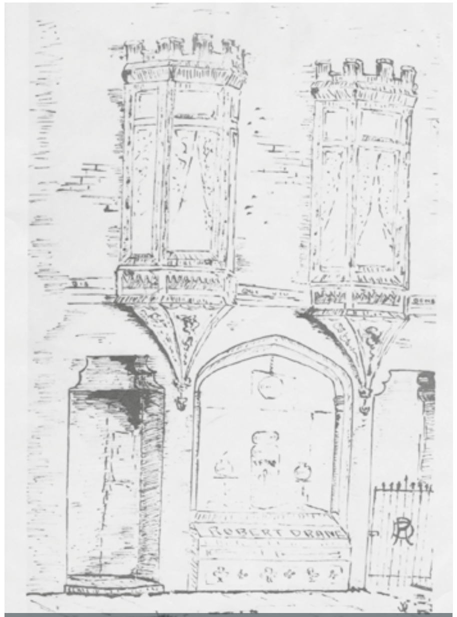
The pre-history of pharmacy education in Cardiff

Dating from the early 20th century, this postcard gives a sense of the bustling atmosphere on Bute Street. (Roger Gilbert, Cardiff Philatelic Society)

In 1858, Robert Drane opened a pharmacy at 11 Bute Street, Cardiff. As a newcomer to the town, he must have imagined that the main route from the busy docks to the growing commercial centre, would be a suitable location for a successful business. Local landowner, the Marquis of Bute had funded the new ocean port nearly twenty years earlier in 1839, in response to global demand for coal from the Welsh valleys, and as a result the town of Cardiff grew from 1,870 inhabitants in the first census of 1801 to 18,351 people in 1851.

In 1867, aged just 34, Drane opened a new premises at Crockherbtown (renamed Queen Street in 1886), close to Cardiff Castle. His confidence was clearly growing as this new property was purpose built, partially designed by Drane to his extremely high standards. His focus was the customer, describing the Queen Street pharmacy as “built expressly for their required purpose with every care to secure the necessary conditions for doing my business well and keeping my wares in a state of perfection, uninjured by the faultiness of places that must be used as they exist, however unsuitable.”

The following year, 1868. was a milestone for the whole of British pharmacy. The Pharmaceutical Society, formed as a national membership body in London in 1841, had been working hard to establish pharmacy as a profession against a backdrop of turf wars with the apothecaries and physicians, and accusations of quackery both from customers and government. The Pharmacy and Poisons Act, passed in 1868, marked a major success in the Society’s ambitions to secure pharmacy’s reputation as trustworthy, science-based and vital to the safety of the general public. It required those wanting to practise as pharmacists to register with the Society, in order to be able to dispense particular scheduled drugs such as opium and strychnine which were deemed to be a potential risk to customers. To qualify for the register, a pharmacist needed to pass one of the Society’s examinations: the Minor exam for those aiming to become an assistant Chemist & Druggist; and the Major exam for those business owners who aspired to be Pharmaceutical Chemists. In that way, entry to the profession was controlled and a scientific education was the key to entry.



Terry Turner, who managed Robert Drane’s pharmacy in the 1950s, sketched its distinctive exterior. (T. D. Turner)

Pharmacy in Wales

Although the pharmacy legislation and regulations were national in scope, the development of the Pharmaceutical Society and its activities was initially very London-centric. What was pharmacy like in Wales in this period? Did the developments radiating from Bloomsbury Square have an impact on Cardiff? And what about on Aberystwyth or Llandudno?

Wales undoubtedly has its own strong medical, and more specifically pharmaceutical, traditions at least as far back as the physicians of Myddfai (Meddygon Myddfai). This small village in Carmarthenshire was the focus of medical practice and learning based on local traditional plant-based medicines. The legend goes that a young farmer married a beautiful girl who appeared from the local Llyn y Fan Fach lake. When he broke his promise not to hit her three times, she returned to the lake taking her magical cattle with her. She revisited once in order to pass on the secret of making herbal remedies from the local plants to their son, Rhiwallan. Here myth and reality blend, as Rhiwallan became the personal physician of Lord Rhys Gryg of Deheubarth (1132-1197). Lord Rhys established a new monastery at Strata Florida in about 1177, which became a centre for plant-based medicine. Rhiwallan probably received his training there, as did his three sons Cadwgan, Gruffyd and Einon, who were given land in Myddfai to recognise their medical work. Their descendants are said to have continued this work until the 18th century, drawing on the mythical secrets of making effective herbal remedies derived from local plants, and their significant bank of acquired knowledge and expertise.

A surviving collection of manuscripts, part of the Red Book of Hergest (Llyfr Coch Hergest), can be traced back to the physicians of Myddfai. The Red Book dates from the late 14th century and is now held by the Bodleian Library in Oxford. It provides valuable details of diagnosis and treatment, most likely an accumulation of herbal medicinal knowledge drawn widely from the South Wales area. Around 500 recipes are recorded in Welsh, including examples for eyesight, headaches, insomnia, warts, nausea, colds and sunburn. A range of plants was recommended such as willow, plantain, cumin, fennel, broom, rue, garlic and pennywort, alongside other natural ingredients such as honey, white wine and oil. The countryside around Myddfai is still very rich in medicinal plants.

The stunning Lyn y Fan Fach ("lake of the small hill") is a key part of the Myddfai legend.

Recent historians, while acknowledging the ongoing Myddfai and folk medicine tradition particularly in rural Wales, have re-evaluated the stereotype that Wales remained a medical and medicinal backwater, purely drawing on an ancient herbal tradition. Dr Alun Withey, and others, have shown that "orthodox" medicine was widely available including in rural areas, certainly from the 17th century onwards. Apothecaries, often serving as a doctor and a dispensing chemist, were spread widely across Wales in country and town locations. For example, surviving bills from John Surner an apothecary in Denbigh show that in April 1699, he made 13 separate trips to Erdigg to treat three members of the Yorke family using unguents (ointments), pills, purges and other substances. It is interesting to note that these types of records only exist in the English language, perhaps suggesting that it was simply the bilingual rich families who could afford these treatments. However, the language of orthodox medical practice seems to have been English. There were no printing presses in Wales until the 18th century, and so medical knowledge that arrived in Wales in printed form would have been in English (or Latin). It seems that Welsh doctors' and apothecaries' ambitions were to appear more metropolitan than their aspiring patrons. After all, the existing medical licensing bodies such as the Society of Apothecaries and Royal College of Physicians were based in London, with little or no links to Wales. Nevertheless, although many Welsh medical practitioners did not seek or achieve licenses, a significant proportion adopted professional English names, especially "Doctor", which medical historians have interpreted to demonstrate a desire to assume an air of professionalism. Apothecaries in towns such as Monmouth, Ruthin and Hay also had business links to London, with licences to sell medicines that had been made in the English capital. For example, in 1674, the accounts of Anthony Daffy of the famous patent medicine, Daffy's Elixir, show that he sent more than 30 half pint bottles of the product to Charles Taylor of the King's Arms pub in Monmouth, presumably for Taylor to sell.

How many apothecaries, carrying out a role similar to a community pharmacist and general practitioner combined, existed across Wales is difficult to gauge. Surviving inventories and wills, combined with references in other historical documents, have put the number of identifiable individual apothecaries at around 124 in the period from 1600-1762. Most, but not all, were in towns. The surviving inventories provide an insight into their businesses and stock. For example, an inventory of John Reynolds' shop at Llanbeblig near Caernarvon in 1770 shows him stocking "drugs, plaisters, cordial waters [and] syrrops." Inventories also show that apothecaries were selling chemical remedies, not just the traditional plant-based simples. Alun Withey's analysis of these inventories and the value of the goods listed suggests that they were earning a good living. They were also aspiring to improve their medical knowledge with English medical books featuring in a number of cases. Henry Williams of Clynnog, Caernarvonshire was able to list a significant collection of medical books amongst his possessions, which challenges the stereotype of backward-looking medical practice in early modern rural Wales. The most detailed surviving listing of a Welsh apothecary belongs to Richard Philpots in Swansea in 1684. It shows that his possessions included one marble mortar and 4 brass mortars, 2 "pistles" and a little brass pan, 11 dozen bottles and 6 dozen gallypotts. As for stock, he had emplaisters, paper, "Spanish white"[wine?], capers and anchovies, sugar and common turpentine, conserves, unguents, "syrops, electuarys and oyles", pills, species and powders, and "chimicall preparations and salts." He was clearly preparing medicines on the premises as he listed 3 stills, 18 bottles, a pestle and mortar, pots, pans and kettles in rooms around his property.

The number of people making and selling medicines grew significantly during the 18th century in response to the growing number of customers benefiting from improved working opportunities which in turn increased available income, and fed the desire for retail goods which included patent medicines and medicinal supplies. This was as true in Wales as across the more densely populated English towns. For example, two Chemists and Druggists were recorded in Merthyr Tydfil in 1822, which leapt to 16 in 1850.

A Complete Directory and Guide to the Town and Castle of Cardiff published in 1796 lists four entries in the section under "Physic": William Bevan, Surgeon, Apothecary and Man-midwife; Griffiths and Reece, Surgeons, Apothecarys[sic] and Men-midwives; John James, Surgeon and Apothecary; and Charles Vachell, Chymist [sic], Druggist and Apothecary. Under "Traders" there is also John Stibbs "Peruke-maker, Bleeder, and Tooth-drawer." Charles Vachell had been a ship's surgeon for three years in the Royal Navy before establishing himself as a druggist in the town. Both of his sons, Charles and William, continued the family chemist's business. By the time Charles Wakeford published his *Wakeford's Cardiff Directory* in 1855, 24 "chemists" were listed. There seems no doubt that the rapidly growing town would have a parallel growth in the need for medicinal supplies, both for its permanent residents and also for the flow of people on and off ships through the docks.

When the Pharmaceutical Society was founded in 1841, it established a voluntary register of members, those who wanted to support its aims. Perhaps surprisingly, given the distance from London, there were 7 founder members, and 5 associate members in Wales, including James Coleman in Cardiff, and Thomas Owen in Pwllheli.

Founder members of the Pharmaceutical Society of Great Britain giving Welsh addresses, published in *Transactions of the Pharmaceutical Society of Great Britain,* January 1842

MEMBERS:

Cardiff
James Coleman, High Street

Neath, Glamorganshire
Charles Hayward
John Hawkins Hunt

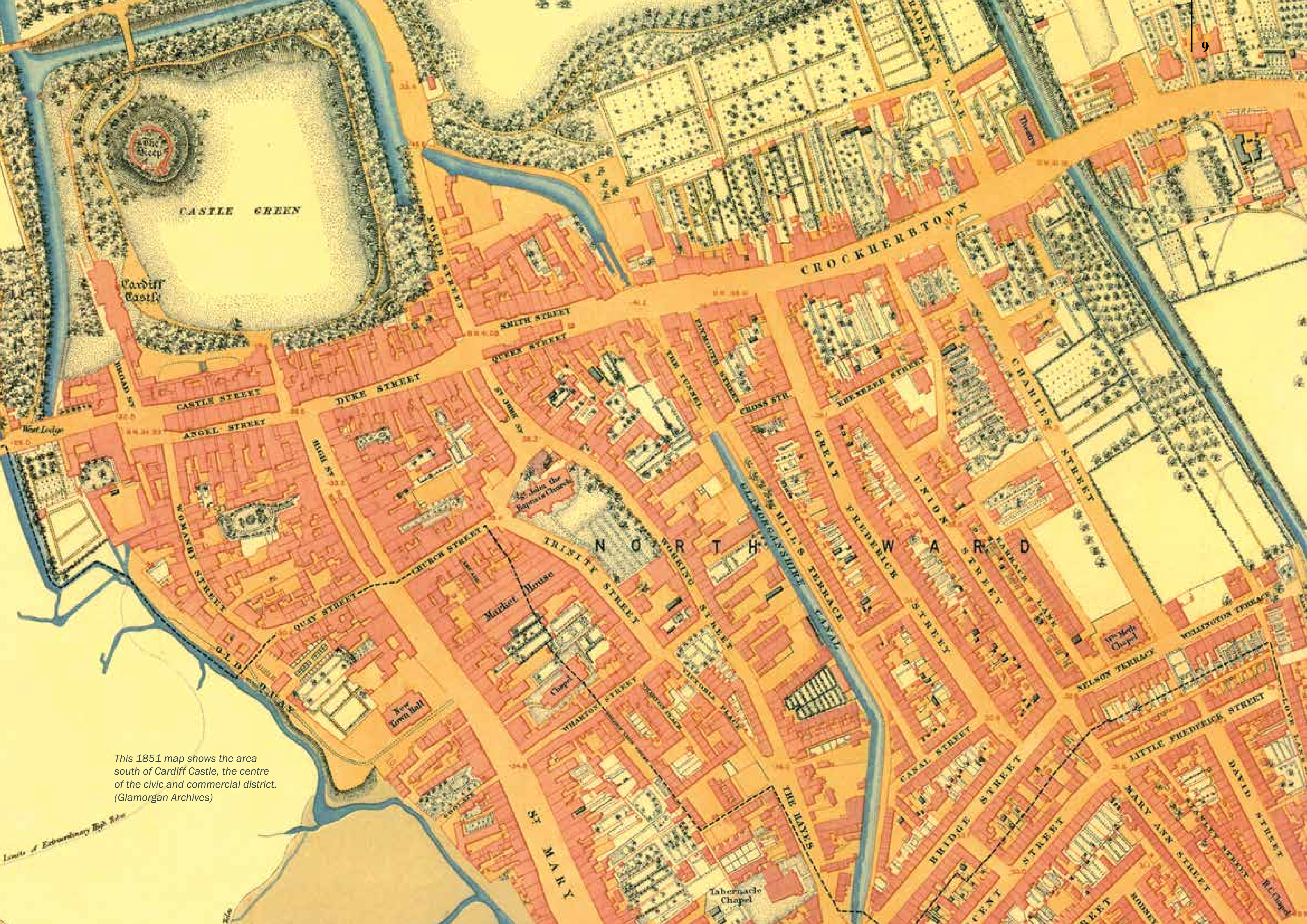
Risca, Monmouthshire
Robert Mullett

Swansea
Sampson Dawe, 23 Castle Street
Sampson Rowland Dawe, 23 Castle Street
Charles Thomas Wilson, Castle Square

ASSOCIATES: (those who had passed the Society's Minor exam)

Carnarvon
Robert Owen, Castle Square
Pwllhelli Thomas Owen, High Street

Swansea
Benjamin Griffith, 23 Castle Street
Benjamin Hammet, Castle Square
Henry Madge Pillman, 23 Castle Street



This 1851 map shows the area south of Cardiff Castle, the centre of the civic and commercial district. (Glamorgan Archives)

How did Robert Drane and his contemporaries become pharmacists?

Before the foundation of the Pharmaceutical Society in London in 1841, anyone wanting to make or sell medicines would usually undertake an apprenticeship with an established chemist. There was no educational or legal framework in operation. After the Pharmacy Act of 1868, a register was established which was only open to those that had passed the Pharmaceutical Society's examinations. This development secured a minimum educational standard for the profession, a significant step in the Pharmaceutical Society's ambition to raise the status of the pharmacist above that of tradesman, and to foster an appreciation by fellow medical professionals, government and the general public, that the role of the pharmacist was scientifically-based and well-established. The Society opened its School of Pharmacy at its Bloomsbury Square headquarters in 1842. Although a long way from South Wales, it had a Welsh presence from the start in the person of Theophilus Redwood from Boverton, Glamorgan as the first professor of pharmacy, a post he held until 1885. Apprenticed originally to his uncle Mr Vachell in Cardiff (who had been listed in the 1796 Directory), Redwood moved to London after 3 years to take up an apprenticeship in John Bell's business on Oxford Street alongside Jacob Bell.

The Pharmaceutical Society was based in Bloomsbury Square, London from the year of its foundation in 1841 until 1976. (Royal Pharmaceutical Society Museum)

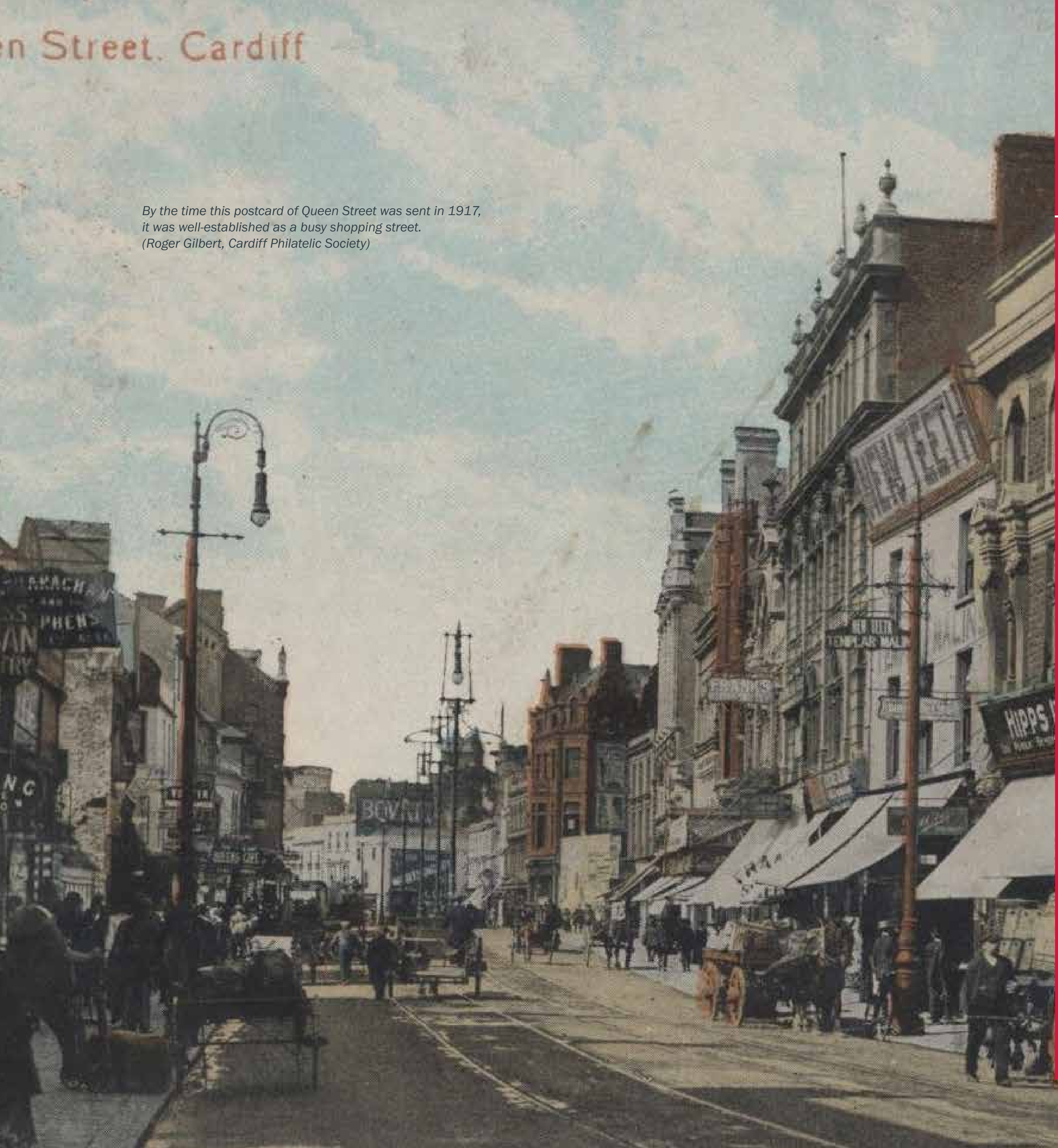
Although far from a typical pharmacist in many respects, Robert Drane's education and training was very typical for the time. He gave an account of his entry into the profession when he spoke to the Cardiff and District Pharmaceutical Association in January 1905. He left school in 1848, passed his "prelim" (preliminary) examination, and was registered as an apprentice with a Mr Francis in Woodbridge, Surrey in July 1849, at a premium of £150 for 5 years. As was the case for apprenticeships across many trades, this meant that his family paid Mr Francis to provide him with training, bed and board, effectively transferring responsibility for him to his apprentice master for this period. Drane's hours as a pharmacy apprentice were typically long, opening the shop at 7:30am and closing at around 10pm, and on Saturdays at 12 noon. A later account related: "Some years ago in an address to the local Association he [Drane] told of the meagre provision that was made for imparting instruction to himself and his fellow apprentices. The London Pharmacopoeia and Gray's "Supplement" were the text-books, and something like a storm was caused among the senior partners of the firm when the junior partner sanctioned the purchase of Fowne's "Manual", Bowman's "Chemistry" and Balfour's "Botany."" On Sundays he started at 7am with a visit to the Sunday School, a cold lunch for religious reasons, Bible class, prayer meeting, evening service and family worship.

In spite of this strong religious theme, it seems that Drane's family questioned Mr Francis's morals, as they moved Robert after only 4 or 5 weeks to a Mr Smith in Magdalene Street, Norwich because of comments he made in his letters home about the adulteration of supplies. Aged 21, he completed his apprenticeship and moved to Allen and Hanburys in Plough Court, London. Allen and Hanburys had a significant pedigree, having been founded in 1715, and run in recent years by William Allen, first President of the Pharmaceutical Society until his death in 1843. Drane does not appear to have sat the (then voluntary) Pharmaceutical Society exams, and does not appear on their 1856 register. (In later life he was extremely critical of the Society describing it as "a bride with a President each year as a new groom" and its council as "men of promise who upon entering the council chamber were asphyxiated by the mephitic vapours of that Silurian Cave where lie the bones of Promise unredeemed and strangled hopes.") Plough Court, now under the control of the Hanbury family had a good reputation for high standards and a strong Quaker morality. The house rules were strict and Drane made an error of judgement in going to the theatre one evening breaking the 11pm curfew. The following morning, on being told that theatre attendance was forbidden, Drane resigned.

Having never visited Wales before, Drane moved to Cardiff on 8 February 1856 to become assistant to the apothecary Griffith Phillips on Duke Street. In a letter to his father from London, dated four days earlier, Drane described the position he had accepted as paying £70 "outdoors" (that is without accommodation provided), with hours from 7am to 9pm, and 11pm on Saturdays. He had an hour for breakfast and dinner, and 40 minutes for tea. He was expected to work on Sundays once a fortnight. He arrived for work on his first day in full morning dress as he had been expected to at Plough Court and was immediately asked to get a pint of paint from the dirty cellar.

It seems that it was an easy decision to start his own business, although raising the capital required the support of his family and one of his father's friends. In 1868, the year after he moved to his purpose-built premises on Queen Street, it became compulsory to pass the Pharmaceutical Society's exams in order to register as a new pharmacist. Existing pharmacists in business before 1868, like Drane, were able to join the register without jumping this educational hurdle.

How many Welsh pharmacists were on the first compulsory Pharmaceutical Society Register in 1869? Note that the Register was divided into Chemists & Druggists, and the higher level Pharmaceutical Chemists. The number of Pharmaceutical Chemists giving Welsh addresses was 72, and the number of Chemists & Druggists was 461, giving a total of 533 registered pharmacists in Wales out of a total of around 12,000 pharmacists in this Register. This included 22 who provided a Cardiff address, for a population of around 70,000 (71,301 in the 1871 census). It's worth noting that number of Welsh pharmacists in 1869 includes 15 women. In fact, there were 223 female pharmacists in total on this first compulsory Register. The majority had taken over businesses from their fathers or husbands, an element of the workforce not considered by the male hierarchy of the Society and the profession.



By the time this postcard of Queen Street was sent in 1917, it was well-established as a busy shopping street. (Roger Gilbert, Cardiff Philatelic Society)

Robert Drane
1833-1914

From the archives of the Cardiff Naturalists' Society, now deposited at the Glamorgan Archives

Born in Norfolk, Drane was initially apprenticed close to home before undertaking a four year apprenticeship at Plough Court in London. He moved to Cardiff and started his own business at 11 Bute Street in 1858. He moved to 16 Queen Street in 1868, to a shop and house built to his design. He was renowned for his pharmacy expertise and the quality of his products and service. He published against the sale of patent medicines and what he called “grocers products” and even wrote a satirical poem attacking a fictional manufacturer of quack medicines called Bunkum and Co. He also had a reputation for rapid staff turnover, as he did not suffer fools gladly.

He was described by a contemporary as *“a young man with a charming manner, a striking appearance and a vocabulary and diction that are the possession of but a few of the world's geniuses.”* He became a recognised antiquarian, researching and publishing works on Castell Coch, Caerphilly Castle, Chepstow Castle and Cardiff Castle. He became expert on Worcester china and amassed an outstanding personal collection, and of silver pomanders amongst other silver items. In 1867, he was appointed honorary curator of Cardiff Museum (now National Museum Cardiff) and was on its Council to appoint its first director and make plans for its new building, shared with the Free Library on The Hayes, which officially opened in 1882 .

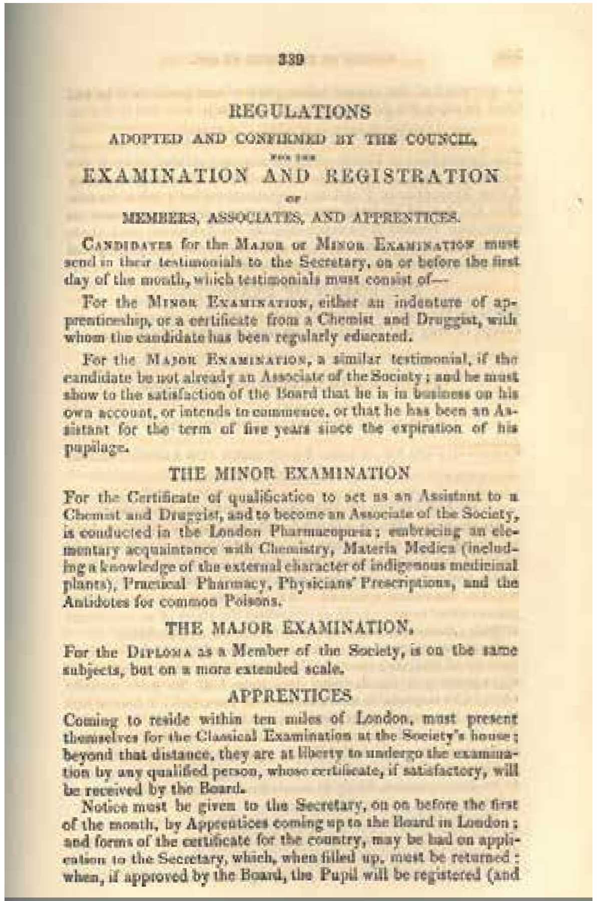
He was deeply interested in natural history and founded the Cardiff Naturalists Society in 1867. He discovered the Skomer vole *(Erotrys skomerensis)*, also known as the Drane vole, in 1897. He was a Fellow of the Linnean Society. He also kept animals at his house, particularly hedgehogs, voles, rabbits and hares. The latter he apparently took into his bed describing them as “truthful and affectionate to a most touching degree they are very gentlemen.”

Once the Society's exams became compulsory, how did aspiring pharmacists in Cardiff, or Wales more widely, acquire the knowledge and practical experience needed to qualify and enter the profession? Apprenticeships still remained as the most usual way to learn the trade, and this continued into the mid-20th century. The challenge was the examinations, which were acknowledged (and criticised in some quarters) to be very academic and hard to pass. This, of course, was part of the Pharmaceutical Society's intention, to elevate the reputation of pharmacy from a trade to a science-based profession, but the questions remain about how Welsh pharmacists educated themselves to pass the exams. One practical issue, which was faced by potential pharmacists from across the country, was that you could only sit the Minor and Major exams in London and Edinburgh. However, classes to teach to the syllabus of the Minor Exam – chemistry, botany, pharmacy and *materia medica*, plus a translation of Latin prescriptions, a practical pharmacy test, and questions on antidotes for common poisons - could be found more locally, usually through a technical college, evening classes or a growing number of pharmacy schools, in combination with practical experience gained through an apprenticeship. Notices from the *Pharmaceutical Journal* show that it was possible to sit the Society's Preliminary Examination in Cardiff before embarking on the core exams.

Nevertheless, there were no pharmacy schools in Wales in the 19th century, either within a public institution or one of the growing number of private schools that were established after the 1868 Pharmacy Act in order to hot-house students to pass the required exam. Although classes were established initially under the Pharmaceutical Society's auspices in the 1840s in towns such as Manchester, Norwich, Bath and Bristol, many foundered through lack of support and funding, and it was only the impetus of the 1868 Act that re-activated a drive for pharmacy education outside London. Schools were established in Portsmouth and Bristol (1869), then Manchester, Leicester, Birmingham, Chelsea and Brighton in the 1880s and 1890s, alongside a significant number of private schools in London including the London College of Pharmacy (1899), Muter's South London School of Chemistry and Pharmacy (1870), and Wills' Westminster College of Pharmacy (before 1874). Liverpool had been the first to follow the Pharmaceutical Society's lead, with the establishment of classes initially in plant classification, pharmaceutical chemistry and Latin for pharmacists by the Liverpool Chemists' Association in 1849. For some living in North Wales, attendance there might have been achievable.

For the majority of aspiring pharmacists, evening classes presented the answer. Some were set up with support from the Pharmaceutical Society through their local associations - in 1869 there were 17, of which 11 had plans for teaching. However, there were none in Wales. The closest to Cardiff were Bristol or Bath, but a table in the *Pharmaceutical Journal* in 1870 shows that even these did not provide classes in all of the required subjects for the Society's exams. It seems little wonder then, that the pass mark for the Society's exams was disappointing: about half the candidates failed the Qualifying Exam in the 1870s, and by the time that the *Pharmaceutical Journal* published a full analysis of exam statistics in 1896, of 793 candidates for the Minor exam, only 260 passed. For the five year period to 1899, the failure rate for all candidates in London and Edinburgh averaged 67 per cent.

People wanting scientific and technical education, including pharmacists, had to rely on evening classes provided by local institutes. Even this was a challenge in some areas. George Schacht, speaking at the British Pharmaceutical Conference in 1870, reported that there were science evening classes in 232 towns in England and Wales, but only 13 included both botany and chemistry, required as the two basic pharmaceutical sciences. Schacht's solution was ideally that all prospective pharmacists should be able to attend classes at Bloomsbury Square to ensure standardised education. This was clearly highly impractical, so his alternative was that local pharmaceutical associations or medical schools should run pharmacy-specific classes. In Wales generally, and Cardiff specifically, in 1869, neither association nor medical school existed.



339

REGULATIONS

ADOPTED AND CONFIRMED BY THE COUNCIL,

FOR THE

EXAMINATION AND REGISTRATION

OF

MEMBERS, ASSOCIATES, AND APPRENTICES.

CANDIDATES for the MAJOR or MINOR EXAMINATION must send in their testimonials to the Secretary, on or before the first day of the month, which testimonials must consist of—

For the MINOR EXAMINATION, either an indenture of apprenticeship, or a certificate from a Chemist and Druggist, with whom the candidate has been regularly educated.

For the MAJOR EXAMINATION, a similar testimonial, if the candidate be not already an Associate of the Society; and he must show to the satisfaction of the Board that he is in business on his own account, or intends to commence, or that he has been an Assistant for the term of five years since the expiration of his pupilage.

THE MINOR EXAMINATION

For the Certificate of qualification to act as an Assistant to a Chemist and Druggist, and to become an Associate of the Society, is conducted in the London Pharmacopœia; embracing an elementary acquaintance with Chemistry, Materia Medica (including a knowledge of the external character of indigenous medicinal plants), Practical Pharmacy, Physicians' Prescriptions, and the Antidotes for common Poisons.

THE MAJOR EXAMINATION.

For the DIPLOMA as a Member of the Society, is on the same subjects, but on a more extended scale.

APPRENTICES

Coming to reside within ten miles of London, must present themselves for the Classical Examination at the Society's house; beyond that distance, they are at liberty to undergo the examination by any qualified person, whose certificate, if satisfactory, will be received by the Board.

Notice must be given to the Secretary, on or before the first of the month, by Apprentices coming up to the Board in London; and forms of the certificate for the country, may be had on application to the Secretary, which, when filled up, must be returned: when, if approved by the Board, the Pupil will be registered (and

The Pharmaceutical Society published an outline of its examination scheme in the Pharmaceutical Journal for the first time in 1843. (Pharmaceutical Journal)

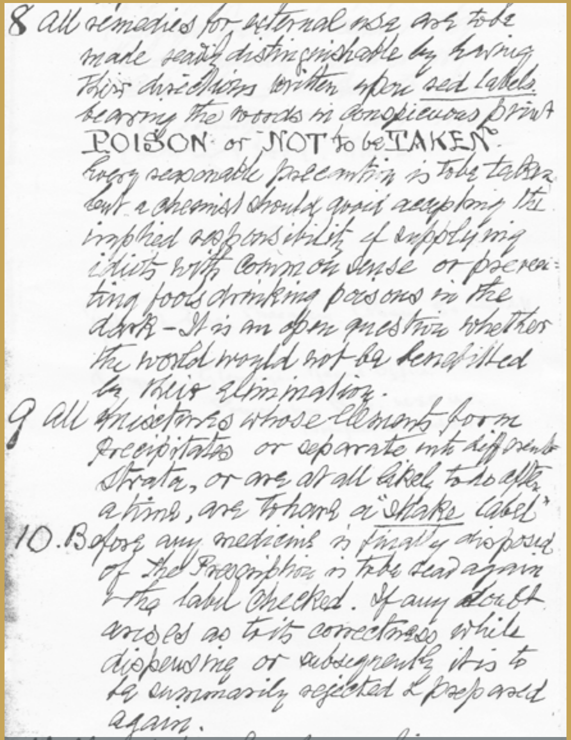
Pharmacy education in Cardiff

It was Robert Drane who stepped in to try to do something about this situation. In 1867 there were three Pharmaceutical Chemists in Cardiff. Drane called on them in an attempt to produce some formal training in chemistry, pharmacy and botany for their assistants. His cooperative scheme intended that there would be nothing to pay, and the assistants would meet two nights a week to learn chemistry and pharmacy. They would also join Drane in Sophia Gardens, Cardiff's first public park, adjacent to Cardiff Castle, at 7am on two mornings a week to learn botany, a class that he had already instituted soon after settling in Cardiff.

Sophia Gardens was opened as a public park by Lady Sophia Rawdon-Hastings in 1858, to provide open space in the rapidly-developing town. (Alexander Wilson, Sophia Gardens,1866. National Museum of Wales)

According to Drane's later account, the scheme fell through because of the *"indolence of the assistants"* and *"the ignorance of the pharmacists."* Drane wrote *"we will shortly have short apprenticeships without premium of inferior aspirants in very inferior places where errand boy is the practical equivalent of pupil. The result will be duffer assistants, uneducated, untrained, poor, pretentious but hall marked, eager competitors at store prices of patent medicines in suburban deserts. I despise electro plate of every grade and species however hall marked."*

Drane's criticism of his fellow Cardiff pharmacists seems typically intolerant. For example, John Davis Treharne, who appears on the first compulsory register at 98 Bute Street was busy building up his business, supplying medicine chests and medication to ships and sailors operating out of Cardiff docks. His focus was unlikely to be education, in spite of Drane's insistence.



8 All remedies for external use are to be made readily distinguishable by having their directions written upon red labels bearing the words in conspicuous print POISON or NOT to be TAKEN. Every reasonable precaution is to be taken but a chemist should avoid accepting the implied responsibility of supplying idiots with common sense or preventing fools drinking poisons in the dark – It is an open question whether the world would not be benefitted by their elimination.

9 All mixtures whose elements form precipitates or separate into different strata, or are at all likely to do after a time, are to have a "Shake label"

10. Before any medicine is finally disposed of the Prescription is to be read again & the label checked. If any doubt arises as to its correctness while dispensing or subsequently it is to be summarily rejected & prepared again.

Robert Drane set out comprehensive and exacting rules for his apprentices. Some were comically realistic, including "a chemist should avoid accepting the implied responsibility of supplying idiots with common sense.".
(T.D.Turner)

Technical education

Aspiring pharmacists in South Wales would have to wait for local technical education to provide what was missing. Cardiff Borough Council began running science and art classes in 1866. They were aimed at working people and held in the evenings, following on from patchy provision from the Mechanic's Institute which had been offered since 1841. Under the headship of James Bush, the classes took place in the Free Library and later became known as the School of Science and the School of Art. A handbook to Cardiff, published in 1896, suggested that the town's Science and Arts Schools included a museum for which specimens were being collected from 1864 onwards, but it's not clear whether these were botanical or medicinal examples.

In 1883, the University College of South Wales and Monmouthshire (UCSWM) was established with 157 students enrolling for the first session. It gained a Royal Charter in the following year. In 1889, the Technical Instruction Act was passed by Parliament in response to a perceived weakness in technical instruction in Britain compared with other trading nations. In Cardiff, a Technical Instruction Committee negotiated with UCSWM to provide technical classes on the council's behalf. From 1890, classes took place as the Technical School of the County Borough of Cardiff. Viramu Jones, the Principal of UCSWM, also headed up the Technical School. He was a visionary leader, and a distinguished physicist who had arrived in Cardiff from Swansea via Balliol College, Oxford and Firth College, Sheffield. He went on to spend eighteen years as Principal before dying of tuberculosis in Geneva aged forty-five.

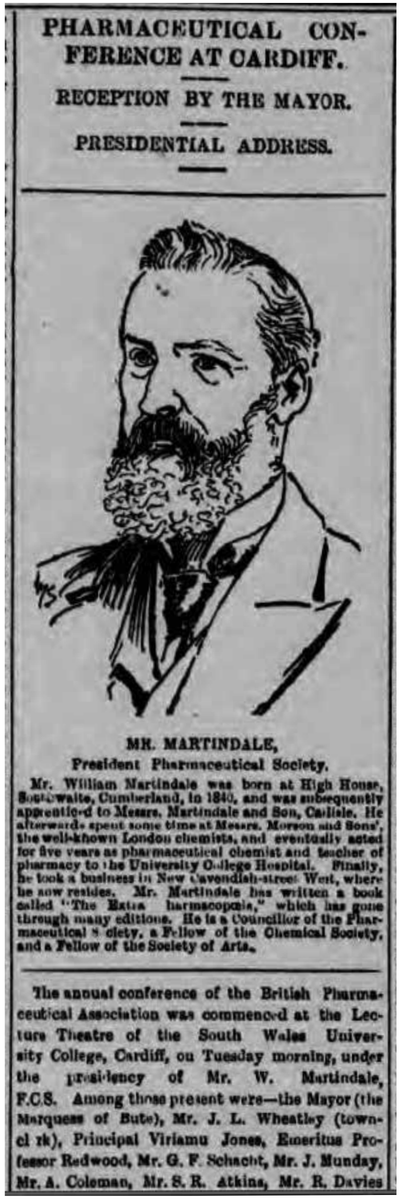
The College's original departments included Engineering, Mining, Metallurgy, Geology, Botany, Zoology, Economics and Political Science, Industrial Relations and the History of Wales, Semitic Languages, and Education.

Meanwhile, in 1893, the University of Wales was founded with UCSWM as one of three constituent colleges. Pharmacy apprentices must have taken the relevant scientific classes where they could, gaining practical experience from their workplaces in the time-honoured tradition. The classes that they needed to cover the subjects required for the Pharmaceutical Society's Minor Exam - chemistry, botany, pharmacy and *materia medica* - existed at UCSWM, although we have no records of pharmacy students attending. The College had professors of Chemistry and Biology from its start, and a lectureship in *materia medica* and pharmacy was established in 1893 as part of the newly-established Welsh National School of Medicine, as an institution to train doctors within Wales. However, the *materia medica* and pharmacy teaching at this stage was specifically aimed at medical students, with these subjects part of the syllabus for the first 3 years of medical study. By 1899, pharmacy courses were offered in 15 science and technology schools across England under the 1889 Technical Instruction Act, but there were still no pharmacy-specific courses in Wales.

The pharmacy profession in South Wales

In spite of the void in pharmacy education, the pharmacy profession in Cardiff, and South Wales more generally, was strong and vocal. In August 1891, the British Pharmaceutical Conference (BPC) was held in Cardiff. First established in 1863, the BPC was a major gathering of pharmacists from across the country, keen to share scientific ideas and to socialise. It was an excellent opportunity for a town to show off its pharmaceutical and other assets, and to make headlines in the pharmacy press. Leading the formal business for Cardiff in 1891 as Conference President was distinguished London pharmacist William Martindale (subsequently infamous through the *Extra Pharmacopoeia*). An account of his presidential address in the Western Mail on 19 August 1891, records his preoccupations, particularly with the status of pharmacists alongside other medical participants and the importance of pharmaceutical education. The 83 year old Theophilus Redwood, Emeritus Professor of Chemistry and Pharmacy from the Pharmaceutical Society's School of Pharmacy and joint editor of the *Pharmaceutical Journal*, responded in very prescient terms. He recalled his apprenticeship in Cardiff and his wish as a young trainee to "have the opportunity of studying pharmacy where it was carried out in a more extensive school than it was here." He concluded to applause that "it would be a great pleasure and gratification to him if in the declining years of his life he should be able to recognise in Cardiff a good, practical, and efficient school established for the education of rising pharmacists."

Meanwhile, the social programme allowed pharmacist visitors to experience the local landmarks, including a trip to Barry Island, and a visit for the ladies to Llandaff Cathedral. Robert Drane provided a visit to Caerphilly Castle for BPC delegates dressed in the costume of the period of James I.



PHARMACEUTICAL CONFERENCE AT CARDIFF.

RECEPTION BY THE MAYOR.

PRESIDENTIAL ADDRESS.

MR. MARTINDALE,
President Pharmaceutical Society.

Mr. William Martindale was born at High House, Southwaite, Cumberland, in 1840, and was subsequently apprenticed to Messrs. Martindale and Son, Carlisle. He afterwards spent some time at Messrs. Morson and Sons', the well-known London chemists, and eventually acted for five years as pharmaceutical chemist and teacher of pharmacy to the University College Hospital. Finally, he took a business in New Cavendish-street West, where he now resides. Mr. Martindale has written a book called "The Extra Pharmacopœia," which has gone through many editions. He is a Councillor of the Pharmaceutical Society, a Fellow of the Chemical Society, and a Fellow of the Society of Arts.

The annual conference of the British Pharmaceutical Association was commenced at the Lecture Theatre of the South Wales University College, Cardiff, on Tuesday morning, under the presidency of Mr. W. Martindale, F.C.S. Among those present were—the Mayor (the Marquess of Bute), Mr. J. L. Wheatley (town-clerk), Principal Viriamu Jones, Emeritus Professor Redwood, Mr. G. F. Schacht, Mr. J. Munday, Mr. A. Coleman, Mr. S. R. Atkins, Mr. R. Davies

The Western Mail covered the Cardiff British Pharmaceutical Conference in detail, including a sketch of William Martindale, PSGB President. The British Library Board. (All rights reserved. With thanks to The British Newspaper Archive.)

The new Cardiff Technical College in 1916, from the photographic records of its builders, E. Turner & Sons. (Glamorgan Archives)

As BPC president, William Martindale presented ten books to the Free Library in Cardiff, "where they could be consulted by all the chemists in the district, as, unfortunately, there was as yet no society or association of chemists in the town which could take charge of them." Martindale expressed the hope that the Conference had brought the local pharmacy community together and would eventually create an association which would work on creating a good library for all members to use.

Nine years later, on the 24 October 1900, a meeting at Imperial Hotel, Bute Docks, passed a resolution to form a pharmacy association for Cardiff and District. In the following May, the Association's Secretary had made a surprise visit to the Free Library to see the books presented by William Martindale and reported that not all were found and those that were seemed "a trifle dusty". The Secretary asked to see the librarian and subsequently, the books were placed in a glass case and made accessible!

However, the Association's ambition to improve pharmacy education ran a lot deeper than a small collection of books. At its first Annual General Meeting on 27 November 1901, the Association noted its members' "determined effort to get a course of lectures on pharmacy at University College." The meeting formally congratulated Mr E. H. Griffiths on his election as principal of University College, and recorded that "the association is hoping that the new principal will be able at an early date to assist the college council with the pharmacy scheme which it has before it." No details are given of the proposal which had been put forward, but in the first year of the Association's existence, its Officers had clearly wasted no time in approaching the College.

From Technical School to Technical College

In 1907, the Borough Council re-gained managerial control of the Technical School to develop and extend the classes. The decision was taken to invest in a new building to house the expanding school, and in 1911 a competition was launched to select a design. Ivor Jones and Percy Thomas were chosen as architects, and the foundations of their neoclassical building were laid in 1913. Cardiff Technical College (now the Grade II listed Bute Building) was instituted in 1916. Although its work was initially restricted by the First World War, it quickly enrolled 500 full-time and 3,500 part-time students.

The College had a dizzying array of vocational courses on offer. The departments included Science and Technology, Maths, Physics, Chemistry, Commerce, Music, and Domestic Arts. Courses ranged from degrees in science subjects to courses for Post Office telephone workers, and from laundrywork to marine engineering. But for aspiring pharmacists seeking courses specific to their chosen profession, they would have to wait until after the First World War.

CHAPTER **TWO**

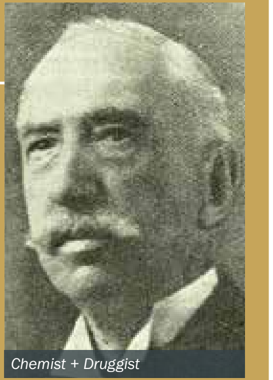
2

“A great event in the history of pharmacy”

1919-1938

Albert Hagon

1859-1933


Chemist + Druggist

Albert Hagon played a key role in the establishment of the School of Pharmacy, acting as an advocate in the local community. He passed the PSGB Qualifying Exam in 1880 and shortly afterwards started his own business at 52 Bridge Street, Cardiff. He subsequently opened a branch at Coburn Street, Cathays, 11 Bute Street, and 5 Bute Street. However, he concentrated his efforts on 5 Bute Street, closing the other three shops, and opening an optical department in around 1908. By 1918, he had established a limited liability company.

Meanwhile, he was the founder and first President of the Cardiff Pharmacists' Association, established in 1901. He described a time before its foundation "when pharmacists in the same locality did not know one another." The Association recorded that "in local pharmaceutical educational matters [Hagon] was the first to bring out the idea of a school of pharmacy."

Hagon also recognised how difficult it was to get anyone from Wales to contest a PSGB Council seat, and that this made it hard for Welsh pharmacists to feel any support for the Pharmaceutical Society: "They feel that the Society is not for them because all the members of its Council are strangers; whereas a member from Wales, resident and in business in the gallant little country, would be an incentive to many to join the Society and so make it more powerful." He himself was elected to the Pharmaceutical Society's Council in 1904 and held office for 18 years.

On his retirement from the Cardiff Pharmacists' Association in 1922, a medal was instigated "in appreciation of his services to local pharmacy, and especially to the Welsh College of Pharmacy, a medal called the Hagon medal is presented annually to the student at that College who shows the greatest promise." Hagon was also a prominent member of the Cardiff Chamber of Trade and of the Duke of York Masonic Lodge.

On Friday 10 October 1919, *The Times* 'News in Brief' column simply reported "Cardiff now has a College of Pharmacy." The following week, the *Pharmaceutical Journal* carried a much more detailed article reporting the official opening of the College by the Right Honourable Lord Mayor of Cardiff on Wednesday 8 October 1919. Sir William Glyn-Jones, Secretary & Registrar of the Pharmaceutical Society of Great Britain (PSGB), gave the inaugural address, and the event was chaired by Councillor F. W. Blake, Chairman of the Technical Instruction Committee "supported by several influential gentlemen." Also present were members of the Cardiff Chemists' Association, and the South Wales and Monmouthshire Local Associations Federation, described as "largely instrumental in bringing this great project to a successful beginning."

This was certainly true. Reports from the pharmacy press show that excitement had been building about the College's opening amongst gatherings of Welsh pharmacists. In February 1919, the Carmarthenshire Chemists' Association held "interesting discussions" about the new pharmacy school "for Wales" in Cardiff. In March, pharmacist Alfred Hagon gave a "chatty and entertaining lecture" to the Cardiff Rotary Club including information about the scheme to open the school of pharmacy in September. Later accounts ascribe the original idea for a pharmacy school in Cardiff to Mr Hagon. Proceedings seem to have become more formal in May 1919, as reported in *The Chemist and Druggist*:

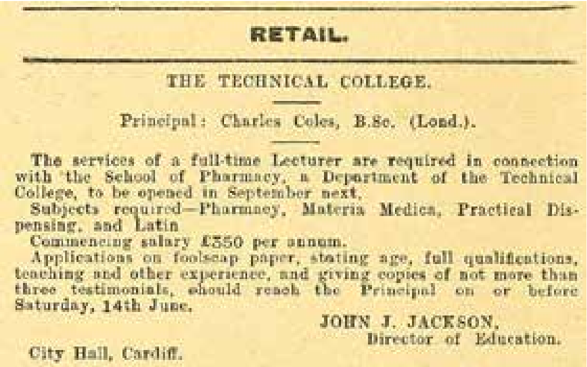
"On May 13 the Advisory Committee of the Cardiff Technical Schools received a deputation of Welsh chemists on the question of the proposed Welsh College of Pharmacy. The views of the deputation were put forward by Mr Alec. S .Johnson (President of the Cardiff Chemists' Association) and Mr E. C. Harden (Secretary to the South Wales Federation of Local Associations). The Committee has since advised the Technical Authorities to commence, in September next, two courses of instruction in pharmaceutical subjects, one extending over a period of nine months, enabling the student to proceed direct to the Qualifying examination, and the other a part-time course. These facilities will render the Welsh College of Pharmacy one of the most up to date in the kingdom. Applications for particulars should be sent, at once, to Mr A. Hagon, 5 Bute Street, Cardiff."

Later that month, Mr Johnson and Mr Harden met with the Cardiff Education Committee, and gained agreement for funding of at least £350 p.a. as a salary for a teacher for a full-time course of study for the Pharmaceutical Society's examinations. It was recognised that there were many prospective pharmacy students amongst demobilised men returning from service in the First World War. The meeting report stated that "There was now every possibility of the course being successfully started."

The South Wales Federation elected an advisory committee to work with PSGB Council member Major Ernest Saville Peck to establish "a course of action in reference to the instituting of the National College of Pharmacy for Wales." The committee's membership reflected the commitment to make it more than a school for Cardiff with representatives from Carmarthen, Pembrokeshire, Merthyr, Swansea and Rhondda as well as pharmacists from Barry, Mid-Glamorgan and Cardiff itself. Mr H. M. Lloyd, the representative from Merthyr, speaking at a Federation meeting held at Merthyr Town Hall, was reported as stressing "the importance of organisation, education and co-ordination. He was certainly in favour of the Cardiff scheme for the Welsh College of Pharmacy, and he hoped that their united efforts would be centred upon it."

Sir William Glyn-Jones, PSGB Secretary, also spoke at this meeting:

"Dealing with the question of the proposed College of Pharmacy for Wales", he said it would be the utmost folly if ever any "pride of area" was allowed to establish schools which might perhaps be glutted with students for a few years and then in succeeding years retain a smaller proportion than would be sufficient for the maintenance of those places." This was addressed by a correspondent in the *Pharmaceutical Journal* who questioned why the school was not being set up in partnership with the Welsh School of Medicine. Candidates working towards the Society of Apothecaries' Assistant Certificate had been able to attend lectures and practical sessions at University College for a number of years, but there were no existing courses for pharmacists.



RETAIL.

THE TECHNICAL COLLEGE.

Principal: Charles Coles, B.Sc. (Lond.).

The services of a full-time Lecturer are required in connection with the School of Pharmacy, a Department of the Technical College, to be opened in September next.

Subjects required—Pharmacy, Materia Medica, Practical Dispensing, and Latin

Commencing salary £350 per annum.

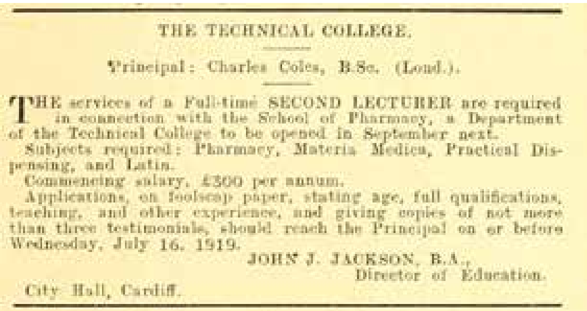
Applications on foolscap paper, stating age, full qualifications, teaching and other experience, and giving copies of not more than three testimonials, should reach the Principal on or before Saturday, 14th June.

JOHN J. JACKSON,
Director of Education.

City Hall, Cardiff.

The Chemist and Druggist 31 May 1919. (Chemist + Druggist)

By May 1919, a pharmacists' committee had met with the Cardiff Technical Committee, and an advert for a "full-time Lecturer" post appeared in *The Chemist and Druggist* on 31 May 1919 and again on 7 June. On 12 July, it was reported "Mr Thomas Lewis, PhC, FSMC, manager with Boots Ltd at Wine Street, Bristol has been appointed Lecturer in Pharmacy in the new department at the Cardiff School of Technology." Although it was not stated in these terms, Lewis's position was as Head of School. In the same edition of *The Chemist and Druggist* there was an advert for a second lecturer, at a salary £50 less than Mr Lewis's role. With plans to staff the new department in place, the Advisory Committee "were instructed" to organise the opening day in October.



THE TECHNICAL COLLEGE.

Principal: Charles Coles, B.Sc. (Lond.).

THE services of a Full-time SECOND LECTURER are required in connection with the School of Pharmacy, a Department of the Technical College to be opened in September next.

Subjects required: Pharmacy, Materia Medica, Practical Dispensing, and Latin.

Commencing salary, £300 per annum.

Applications, on foolscap paper, stating age, full qualifications, teaching, and other experience, and giving copies of not more than three testimonials, should reach the Principal on or before Wednesday, July 16. 1919.

JOHN J. JACKSON, B.A.,
Director of Education.

City Hall, Cardiff.

The Chemist and Druggist 12 July 1919. (Chemist + Druggist)

Although the advocacy of local pharmacy organisations had been key in bringing the pharmacy school into being, the impact of the significant numbers of returning servicemen after the First World War acted as a national economic catalyst to technical and vocational education more broadly. After the War, 4,000 ex-servicemen applied to the Central Grants Committee for state-aided pharmaceutical training. The capacity of existing pharmacy schools was about 500 students, and so this demand prompted the Ministry of Labour to ask the PSGB to arrange for and approve schools to train them. Speaking at the School's Opening Ceremony, Councillor F. W. Blake, Chairman of the Technical Instruction Committee, made it clear that "it had taken the war to teach and wake up the Local Authorities to the need in this direction." Cardiff was just one of the schools that were approved by the Society in this post-war period alongside those in Aberdeen, Birmingham, Brighton, Dundee, Edinburgh, Exeter, Glasgow, Leicester, Manchester, Newcastle, Nottingham, Portsmouth, Sunderland and Swansea. Schools that were going to train ex-servicemen received a government grant. In the 1919-20 academic year, the PSGB allocated 1,400 students to pharmacy courses, of whom around 50 came to Cardiff. Nationally, more than 1,000 men were not allocated places in 1919, and the PSGB established "the homework scheme." Students were provided with three or four books and then could sit for the Society's exam in these subjects. Thirty-six in 1919 were from the Cardiff district. At the School's opening day, on 8 October 1919, the Lord Mayor commented "We must do all we can to help the men who found security for us in the time of strife and danger we had just been through."

This blurred image is the earliest surviving photography of staff and students in the Dispensing Lab, taken in 1924. (Pharmaceutical Journal)

Thomas Lewis
b.1890

Thomas Lewis served his apprenticeship with Mr J. Jones of Bridgend from age 14, and registered as a pharmacist on 10 July 1911. Lewis's grandfather was a founder-partner in the sinking of the local Ffaldau Colliery. After suffering a mining injury, Thomas's father, William Lewis, set up a grocery and bakery business in Bridgend, which was carried on by Thomas's two brothers. Thomas worked at pharmacies in Swansea and Bristol before becoming Lecturer in Pharmacy in Cardiff in 1919. He was elected to the PSGB board of examiners in 1923, and also served as an examiner for the Leverhulme scholarship in 1926. He became chair of the Students' Social Committee and vice president of Old Students' Association. In 1925, he became Vice President of the Cardiff Pharmacists' Association, taking up the role of President in December 1926. He left the School in 1929.

In 1930, he and his Brecon-born wife (we do not know her name) moved to the USA to work for S. B. Penick and Co, a major pharmaceutical manufacturer, first established in North Carolina in 1914. An undated newspaper cutting from the *Western Mail*, probably from the late 1940s, describes Lewis as "the big noise" in chemical drug research. It reports that he is Vice President and Technical Director of S. B. Penick and Co, controlling 12,000 workers in five New Jersey factories.

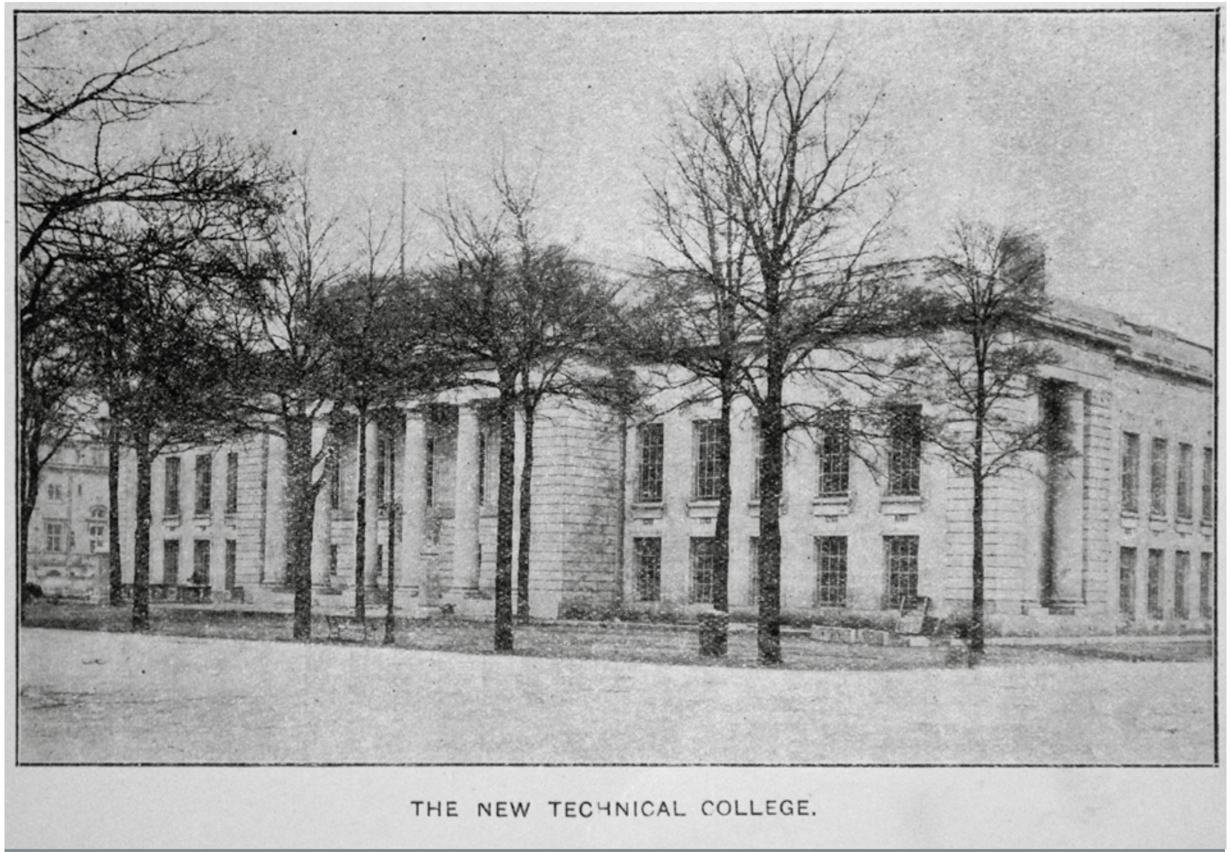
One of the company's major post-war projects was a new "anti-biotic" called Bacitracin, first isolated in 1945. The article explains that "It's in the penicillin and streptomycin field and has great potentialities." Lewis was elected a member of the United States Pharmacopoeia General Committee of Revision for the 1950-60 decade, and was awarded a Doctor of Philosophy in recognition of his work as a lecturer in American university colleges. The article concludes that Mr and Mrs Lewis intended to retire to Penarth, but whether they returned to Wales is unclear.

“There was every possibility of the School being a great success”: establishing the School

At the School’s opening, aspirations were justifiably high. Councillor Blake stressed that “No effort on his Committee’s part would be lacking to make this School of Pharmacy rank highest in the country. It rested also with the students themselves. They were not catering for Cardiff alone, but for the whole of Wales. The lecturers obtained were of the best, and appointed by his Committee in consultation with chemists themselves. There was every possibility of the School being a great success.” The Lord Mayor encouraged the first cohort of students to “keep high the flag they had been called upon to carry, and remember that Wales had turned out some of the finest men the world had produced.” He also noted that he was “delighted to see that young women had the same opportunities as the men.” Sir Glyn-Jones raised the stakes even higher, telling the students: “It was their privilege to be educated at the Welsh College of Pharmacy, and they were the first students who would set the traditions of the College so high, he hoped, that in after years to be able to say that one was educated at the Welsh College of Pharmacy would do much to secure a berth in advance of others not so fortunate.”

Joining Mr Lewis as his assistant and Lecturer in Pharmacy, Materia Medica and Latin, was Mr F. C. Highfield. Mr Rudge, BSc was also listed in the first year as Lecturer in Botany and Chemistry, and Thomas Jones as Lecturer in Physics, both existing staff in the appropriate Technical College departments.

> **“All students are required to conduct themselves in a quiet and orderly manner. Loitering in the halls and corridors is prohibited.”**
>
> Technical College prospectus, 1919



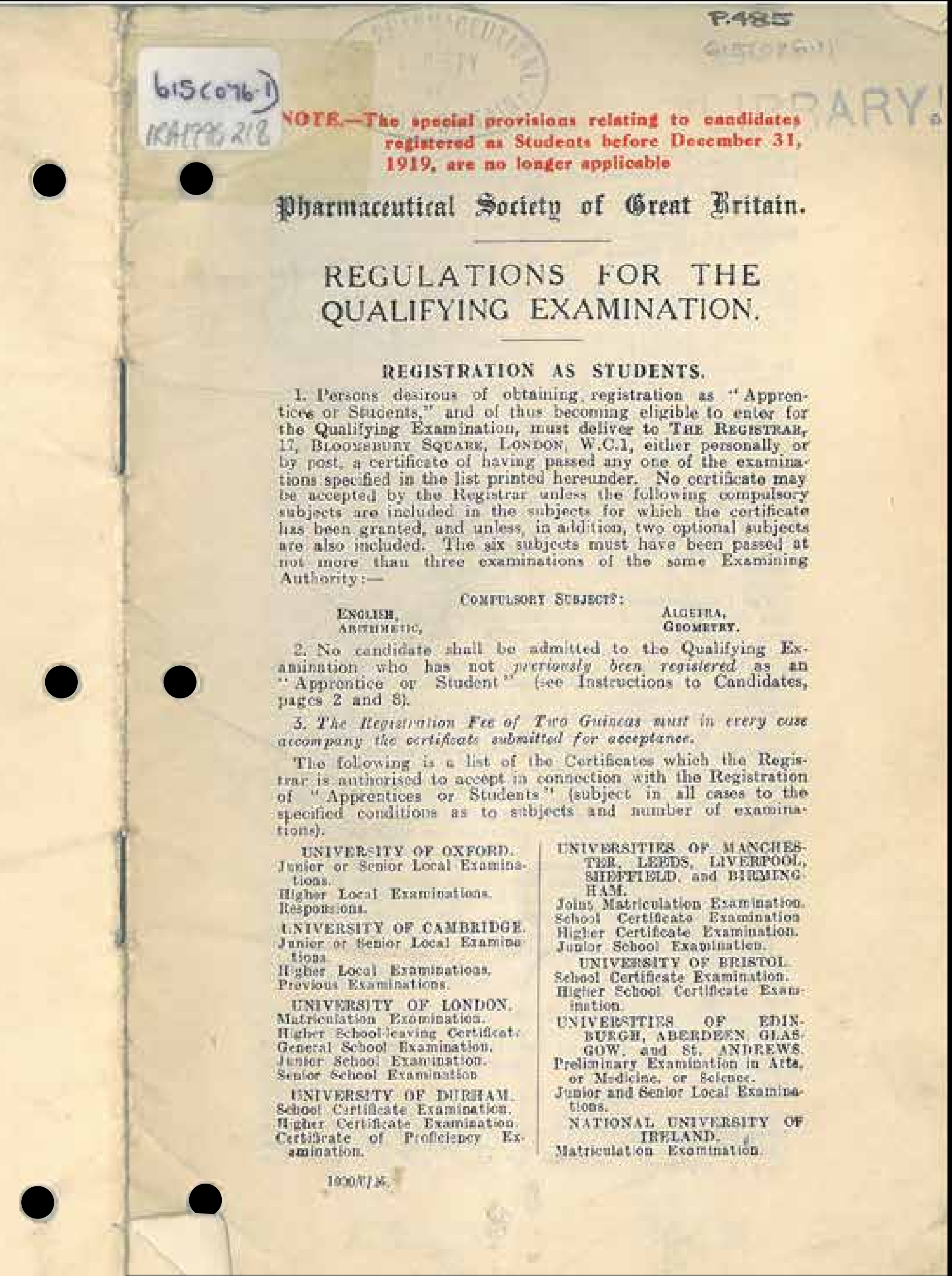
“The New Technical College” from its 1921-22 prospectus. (Glamorgan Archives)

And so it was down to work. The College’s primary offering was a nine month full-time course that led to the PSGB Qualifying Exam. This was a new qualification in 1918, re-worked from the PSGB’s existing Minor Exam, as a result of the government delegating the provision of pharmacy education centrally to the PSGB for the first time in response to the post-war influx of student pharmacists. By 1920, this Qualifying Exam was split into two parts: pure science (Chemistry, Physics and Botany) and an applied pharmaceutical section (*materia medica*, pharmacy including posology (study of dosages), the translation and dispensing of prescriptions, and poisons laws). The two parts of the exam could be taken together or separately. To accommodate the post-war boom in students, an unlimited number of schools were allowed to teach Part I in order to facilitate these numbers, but the number allowed to teach Part II was restricted to allow a level of control over the purely pharmaceutical elements so that they remained up to date. The Cardiff school was authorised to teach both parts.

The new applied pharmaceutical section in Part II, including dispensing of prescriptions and supply of scheduled poisons, was prompted by the need to produce pharmacists to fulfil the duties of the 1911 National Insurance (N.I.) Act, whose impact was only fully felt after the First World War. Its implementation in July 1912 meant that free medical treatment was supplied to all insured people. This had a significant impact for retail pharmacists who were part of the "panels" that were authorised to provide N.I. prescriptions. Before 1913, 90 percent of dispensing took place in doctors' surgeries, and one provincial pharmacy reported dispensing only 43 prescriptions in nine years. Now, pharmacists were a key part of a system that marked the first step towards today's welfare state in Britain.

Surviving Cardiff Technical College prospectuses shed further light on the pharmacy course. The eligibility regulations were stringent, laid down mainly to comply with the PSGB requirements. Before starting the course, students must have already passed exams in English, Maths (Arithmetic, Algebra and Geometry) and two other optional subjects set by a specified shortlist of acceptable exam boards which included the Central Welsh Board (Junior Certificate), Oxford Junior, Cambridge Junior, London Matriculation or Welsh Matriculation. A prospective student then had to apply for registration to the PSGB and spend not less than two years (or 4,000 hours) in a pharmacy controlled by a "duly qualified Pharmacist." The national guidelines laid down that this could be either wholly in retail, or half and half in retail and a hospital setting. Following this, they must spend at least 300 hours studying Chemistry, 60 hours in Botany and 60 hours in Physics at an institution approved by the PSGB before being entered for the Part I exam. The PSGB Council had newly devised these preliminary scientific syllabuses to bring them in line with first year courses at university level so that the pharmacy students could be hosted by existing science courses. If students chose to continue to take the Part II exam, they must first attend a course of study of 720 hours in Pharmacy and *Materia Medica* at an approved institution, and must also be at least 21 years old.

The recommendation from Cardiff Technical College was that during the two years spent in a pharmacy, a student should take advantage of any local courses in Chemistry, Botany and Physics before proceeding to the full-time course, taking Part I in the first year and Part II in the 2nd year. The prospectus suggested "This plan of study will enable the student to fully grasp the work laid down in the syllabus instead of attempting to cram the work into the all-too-few hours laid down by the Society. He will thus become a trained Chemist who should easily pass the qualifying examinations."



P.485

615(076·1)
KA1996.218

LIBRARY

NOTE.—The special provisions relating to candidates registered as Students before December 31, 1919, are no longer applicable

Pharmaceutical Society of Great Britain.

REGULATIONS FOR THE QUALIFYING EXAMINATION.

REGISTRATION AS STUDENTS.

1. Persons desirous of obtaining registration as "Apprentices or Students," and of thus becoming eligible to enter for the Qualifying Examination, must deliver to THE REGISTRAR, 17, BLOOMSBURY SQUARE, LONDON, W.C.1, either personally or by post, a certificate of having passed any one of the examinations specified in the list printed hereunder. No certificate may be accepted by the Registrar unless the following compulsory subjects are included in the subjects for which the certificate has been granted, and unless, in addition, two optional subjects are also included. The six subjects must have been passed at not more than three examinations of the same Examining Authority:—

COMPULSORY SUBJECTS:

ENGLISH,
ARITHMETIC,
ALGEBRA,
GEOMETRY.

2. No candidate shall be admitted to the Qualifying Examination who has not *previously been registered* as an "Apprentice or Student" (see Instructions to Candidates, pages 2 and 8).

3. *The Registration Fee of Two Guineas must in every case accompany the certificate submitted for acceptance.*

The following is a list of the Certificates which the Registrar is authorised to accept in connection with the Registration of "Apprentices or Students" (subject in all cases to the specified conditions as to subjects and number of examinations).

UNIVERSITY OF OXFORD.
Junior or Senior Local Examinations.
Higher Local Examinations.
Responsions.

UNIVERSITY OF CAMBRIDGE.
Junior or Senior Local Examinations.
Higher Local Examinations.
Previous Examinations.

UNIVERSITY OF LONDON.
Matriculation Examination.
Higher School-leaving Certificate.
General School Examination.
Junior School Examination.
Senior School Examination.

UNIVERSITY OF DURHAM.
School Certificate Examination.
Higher Certificate Examination.
Certificate of Proficiency Examination.

UNIVERSITIES OF MANCHESTER, LEEDS, LIVERPOOL, SHEFFIELD, and BIRMINGHAM.
Joint Matriculation Examination.
School Certificate Examination.
Higher Certificate Examination.
Junior School Examination.

UNIVERSITY OF BRISTOL.
School Certificate Examination.
Higher School Certificate Examination.

UNIVERSITIES OF EDINBURGH, ABERDEEN, GLASGOW, and St. ANDREWS.
Preliminary Examination in Arts, or Medicine, or Science.
Junior and Senior Local Examinations.

NATIONAL UNIVERSITY OF IRELAND.
Matriculation Examination.

1000/7/26.

The Pharmaceutical Society published 'Regulations for the Qualifying Examination' in 1919, with full details of the syllabus. (Royal Pharmaceutical Society Museum)

Fred C. Highfield

1894 - 1978

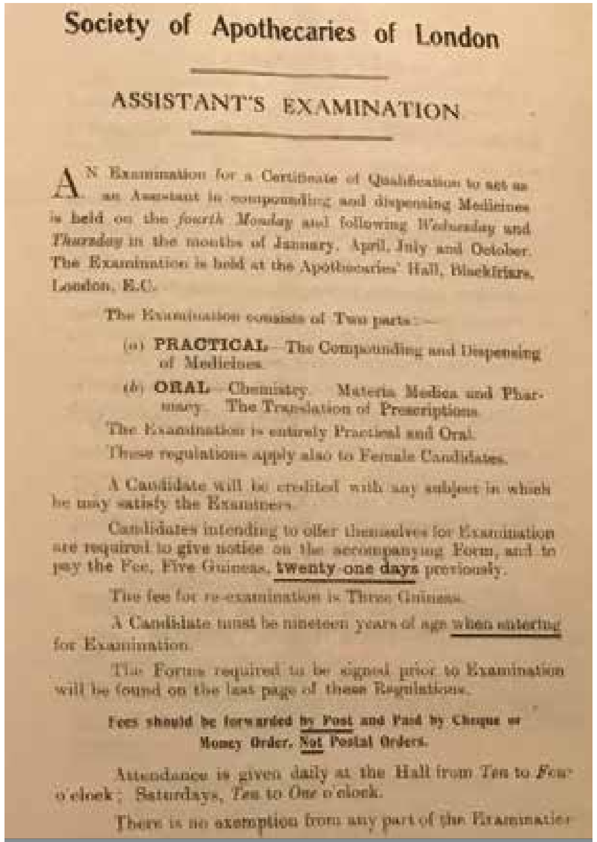
F. C. Highfield qualified as a pharmacist in 1915. Having spent a short time as a locum pharmacist in London, he served overseas in the Royal Army Medical Corps as a dispenser for four years. He returned to civilian life with a short post as assistant manager of Boots in Birmingham before taking up the role as Assistant Lecturer at the Welsh College of Pharmacy on its opening in 1919.

He stayed at the School for four years before acquiring a pharmacy in West Bridgford, Nottingham in 1923 which he later sold to Boots in 1930. He went on to own a pharmacy in Hounslow for three years, and then in 1933 acquired the business of C. Gadd and Son at Vauxhall. In 1936, he became an inspector for the Pharmaceutical Society. After eventual retirement from the inspectorate, he worked in the editorial department of the Society's department of pharmaceutical sciences.

He also served as chairman and secretary of a number of PSGB local branches, and on the Society's board of examiners. According to his obituary, read out at a PSGB Council meeting, he continued to work until he was over 80 years old.

Of course, full-time attendance for two years was a luxury that many aspiring pharmacists could not afford. The College also offered a part-time course running on Mondays and Fridays from 2:30pm to 5pm at three guineas (£3.15) a session for students from Cardiff and Glamorgan, or six guineas (£6.30) for students outside these areas. The part-time course covered Pharmacy, *Materia Medica*, Practical Dispensing, Latin, and was linked to Part II of the PSGB's exam "arranged for apprentices and junior assistants in order that they may obtain additional practice in dispensing etc, to that of the Pharmacy and also to thoroughly understand the theory underlying the operations." Today we might call it a "day release" scheme. However, the prospectus is clear that simply attending these two sessions each week alongside your apprenticeship may not be enough: "At the same time it is necessary to point out to the student that he should take advantage of one or more of the Evening Classes in Chemistry, Botany and Physics in order that he [sic] may more easily understand the principles of the practice of Pharmacy." The student also had to invest in relevant equipment: "Students are expected to purchase a box of Dispensing apparatus at a cost of £1 10s 0d, [£1.50] and also to provide themselves with suitable note-books."

The College also offered the Apothecaries' Hall exam, which had previously been offered by University College. This qualification for assistants or dispensers, which had been established by the Society of Apothecaries after the Apothecaries' Act of 1815, was particularly popular with women students who found that this role was an acceptable one at a time when a female pharmacist, especially working in retail, could be controversial. Women pharmacists in this period still faced significant prejudice from both male and female customers if they worked behind the pharmacy counter, and gaining any kind of business experience was almost impossible. The Apothecaries' course comprised Pharmacy, *Materia Medica* and Chemistry, and was less academic than the PSGB qualifications, especially for students who did not aspire to own their own business. Interestingly, the Technical College prospectus promotes the course purely for female students within a separate section headed "Women Dispensers." With photographs and speeches indicating that a significant proportion of woman students were enrolling in the main PSGB courses, this gendered section seems out of touch. Without surviving student records for this early period, it is difficult to know whether there were also any men taking the Apothecaries' exam.



Society of Apothecaries of London

ASSISTANT'S EXAMINATION

AN Examination for a Certificate of Qualification to act as an Assistant in compounding and dispensing Medicines is held on the *fourth Monday* and following *Wednesday* and *Thursday* in the months of January, April, July and October. The Examination is held at the Apothecaries' Hall, Blackfriars, London, E.C.

The Examination consists of Two parts:—

(*a*) **PRACTICAL**—The Compounding and Dispensing of Medicines.

(*b*) **ORAL**—Chemistry. Materia Medica and Pharmacy. The Translation of Prescriptions.

The Examination is entirely Practical and Oral.

These regulations apply also to Female Candidates.

A Candidate will be credited with any subject in which he may satisfy the Examiners.

Candidates intending to offer themselves for Examination are required to give notice on the accompanying Form, and to pay the Fee, Five Guineas, **twenty-one days** previously.

The fee for re-examination is Three Guineas.

A Candidate must be nineteen years of age when entering for Examination.

The Forms required to be signed prior to Examination will be found on the last page of these Regulations.

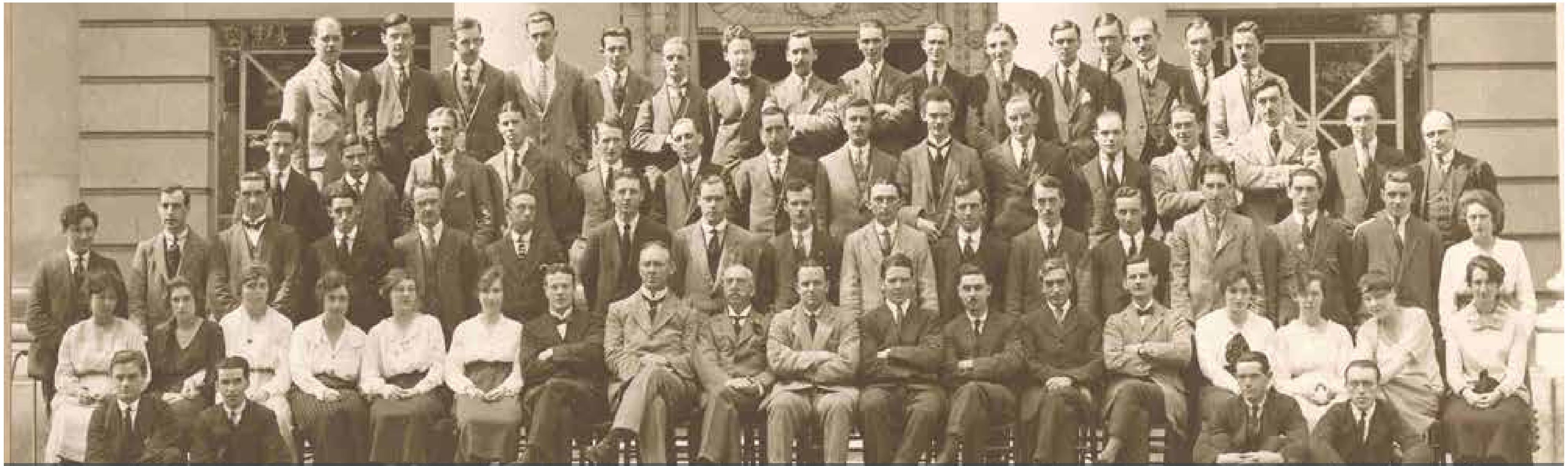
Fees should be forwarded by Post and Paid by Cheque or Money Order. Not Postal Orders.

Attendance is given daily at the Hall from *Ten* to *Four* o'clock; Saturdays, *Ten* to *One* o'clock.

There is no exemption from any part of the Examinati

A 1919 booklet outlined the requirements of the Society of Apothecaries' Assistant's Examination, also known as the "Apothecaries' Hall Exam." (Image used by kind permission of The Worshipful Society of Apothecaries)

Fees for the courses were £15 15s (£15.75) for the full-time course (worth about £850 in today's money), £3 3s (£3.15) for the part-time course (about £170 today) and £15 15s (£15.75) for the Apothecaries' Hall course. There was an additional £1 fee for apparatus and a £1 deposit to cover breakages. There was one scholarship available worth £40, open to applications from residents and non-residents of Cardiff. The first recipient was announced as Mr J. R. Davies of Pen-y-Graig in the Rhondda.



The first intake of students was photographed with the staff outside the Technical College (now Bute Building) in August 1920.

In February 1920, Mr Benson Harries from Newport and Mr H. M. Joseph from Cardiff represented the local pharmacists' Federation on a first visit to the College. Mr Harries reported back: "He spoke highly of the organisation of the various departments. The botanical-histological department has been equipped with new microscopes. Pharmacy, he said, with its apprenticeship and subsequent college training, formed an ideal beginning for a successful career as an industrial chemist." The first year intake appears to have met the required standard with reports in late July 1920 of exam passes for Cardiff-based students including W. C. Nicholas for the Qualifying Exam, and J. M. Davies and W. V. Niblett for Parts I and II exams.

After the department's first year of operation, the staff must have been relieved to hear that Cardiff Technical College had again been approved for teaching towards the PSGB's exams, following an inspection by the Society's representative Ernest Saville Peck. This ensured that it could continue to accept servicemen with government grants, and that the School had reached "a certain standard in teaching and equipment."

The School appears in the annual education listings in *The Chemist and Druggist* for the first time on 21 August 1920. To the original staff list is added Mr H. Aldred MSc, joining Mr Rudge in Physics, and Miss Margaret L. Andrews MSc joining Mr Jones in Botany. The School was clearly meeting a local need as the piece ended: "All the benches for the next session, which will commence on October 5, have been allotted."

On Thursday 21 October 1920, the second session was formally opened with an inaugural meeting. The guest of honour was PSGB President, E. T. Nethercoat, who spoke about "the great advances made in pharmaceutical education during the past two years, during which time a definite period of training and curriculum of study had been laid down for students intending to qualify as pharmacists" that coincided with a "reconstruction period in national affairs." Nethercoat finished his speech by "advising the Students to apply themselves diligently to their studies; if they did so, they would find nothing terrible in the examinations, but should pass easily and become Qualified Pharmacists."

Charles Coles, Principal of the Technical College, gave an overview of the School's activities for the previous year, giving "great praise to Messrs Lewis and Highfield." He started with a breakdown of student numbers: 63 full-time students, including 53 ex-servicemen, were working for the Minor Exam; 12 full-time students on the Apothecaries' Hall exam course; and 13 part-time attending three afternoons each week. The total of 88 students represented maximum capacity for the College. Looking ahead to the following academic year, there were 51 full-time students on the Minor course, including 41 ex-servicemen, 12 Apothecaries' Hall students, and 10 part-time students. In the first year, 21 students had passed Parts I and II of the PSGB Qualifying Exam and were now pharmacists. Sixteen had passed Part I.

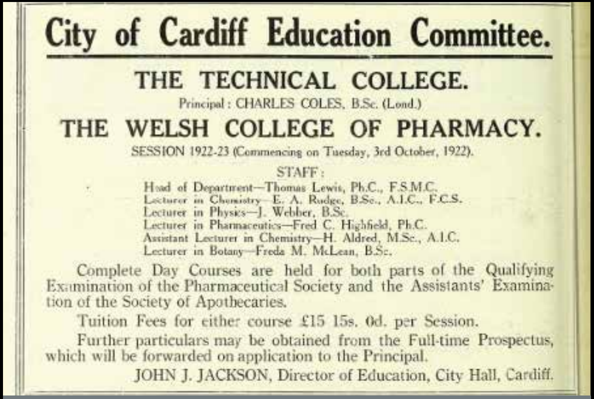
Coles also announced that the department had received recognition from the Board of Trade which meant that half of its expenditure in future would be met from national sources, although during the past and present year the School was self-supporting. He concluded with the assessment that the current nine month course "was much too short for a student to really grasp the whole of the subjects in a thorough manner, more like three years being a proper period." Prescient statements continued at an evening meeting on the same day with PSGB President Nethercoat predicting that pharmacy education in the future would need to include bacteriology, analysis and X-ray work, which in turn would lead to a better appreciation by the public. Leo Joseph, Cardiff pharmacist, Justice of the Peace and leading member of the School's advisory committee, also spoke stating the belief that there would be a place for properly trained pharmacists in a State Medical Service that would follow, all more than 20 years before the National Health Service started.

“So complete a pharmaceutical department”: the courses

In February 1921, obviously feeling established, the College’s Advisory Committee wrote to the PSGB Council regarding the standard of apprentices in their Preliminary Exams. Although some had a high standard of education, “that of many was of a very poor order.” A special class was being run in Cardiff to instruct those struggling students, which the Committee put down partly to “the difficult times through which the country had passed.” Perhaps unrealistically, the Committee put forward the idea that the educational standard for PSGB Preliminary Exams should be raised to that required in the medical and dental profession, and asked that the issue be discussed at a forthcoming PSGB conference of principals of Schools of Pharmacy. Edmund White, Chair of the PSGB Education Committee, supported the desire to raise the students’ standard of education, but identified that demobilised men did not have “sufficient education on which to build and train for the Qualifying examination…it had to be remembered that special circumstances obtained during the past two years which had had the tendency to lower the standard.” The current cohort in Cardiff included 21 ex-servicemen, down from 22 in the previous year, and this phase of the School’s existence, its foundation prompted by this post-war need, was obviously petering out. An advert appeared for the School in the annual August educational section of *The Chemist and Druggist* presumably because, for the first time with ex-servicemen numbers falling, there were places to advertise on the courses.

Sir Glyn-Jones, speaking at the meeting of the South Wales and Monmouthshire Federation held in Tenby in September 1921, was very clear about the future potential for the pharmacy profession:

“He appealed for a more educated type of apprentice, as in the future the work of the Pharmacist would in his opinion be that of relieving the Medical Man of a fair quantity of his work, in the matter of Urine testing, Sputum analysis, Preparation of Vaccines, Infant welfare institutions etc, thus would it be absolutely essential to secure the better trained youth or young lady. The future qualification would have to be adapted to future requirements…” The Technical College Principal, Charles Coles noted that of the 15 students that had passed Parts I and II, three were ladies “successful at their first attempt.”



City of Cardiff Education Committee.

THE TECHNICAL COLLEGE.

Principal : CHARLES COLES, B.Sc. (Lond.)

THE WELSH COLLEGE OF PHARMACY.

SESSION 1922-23 (Commencing on Tuesday, 3rd October, 1922).

STAFF :

Head of Department—Thomas Lewis, Ph.C., F.S.M.C.
Lecturer in Chemistry—E. A. Rudge, B.Sc., A.I.C., F.C.S.
Lecturer in Physics—J. Webber, B.Sc.
Lecturer in Pharmaceutics—Fred C. Highfield, Ph.C.
Assistant Lecturer in Chemistry—H. Aldred, M.Sc., A.I.C.
Lecturer in Botany—Freda M. McLean, B.Sc.

Complete Day Courses are held for both parts of the Qualifying Examination of the Pharmaceutical Society and the Assistants’ Examination of the Society of Apothecaries.

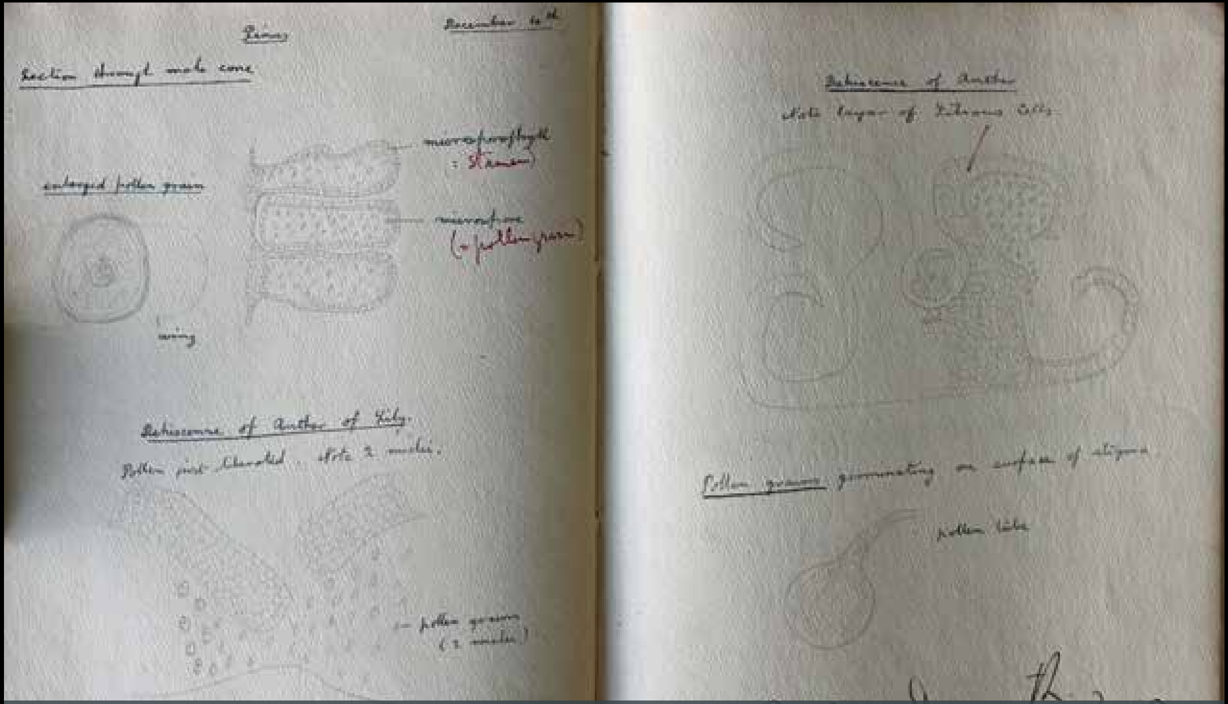
Tuition Fees for either course £15 15s. 0d. per Session.

Further particulars may be obtained from the Full-time Prospectus, which will be forwarded on application to the Principal.

JOHN J. JACKSON, Director of Education, City Hall, Cardiff.

The Chemist and Druggist 12 August 1922. (Chemist + Druggist)

> **“It was not always the brilliant man who could be depended upon to carry out the work of pharmacy with absolute accuracy and reliability. Not all students could be brilliant, but it was possible for all to be reliable, and these would be the men who would be chosen to perform works of a delicate nature.”**
>
> Edmund White, Chairman of PSGB Education Committee, speaking at the opening session of the School, 19 October 1921


Pinus
December 14th
Section through male cone
microsporophyll
(= Stamen)
enlarged pollen grain
microspore
(= pollen grain)
wing
Dehiscence of Anther of Lily.
Pollen just liberated. Note 2 nuclei.
pollen grains
(2 nuclei)
Dehiscence of Anther
Note layer of fibrous cells
Pollen grains germinating on surface of stigma
pollen tube

Research in the PSGB Registers shows that the L. M. Murray who created this Botany notebook as a student at the School in 1925-26, was Lina Mary Murray. She registered as a Chemist & Druggist on 26 March 1929, giving 11 Dogo Street, Cardiff as her address. She is subsequently registered at 5 Bute Street, then 5 Hayes Bridge Street, both addresses for the pharmacy of Albert Hagon Ltd. She disappears from the registers in 1939, perhaps when she got married. (Glamorgan Archives)

As might be expected, the School did not start with a programme of outside visits and talks, concentrating instead on establishing the courses. However, a lecture was reported in *The Chemist and Druggist* in December 1922, given to pharmaceutical and optical students by Mr J. Gosling of J. W. Atha & Co, London. He "gave explanation of the microscope as applied to the study of pharmacy, and showed lantern-slides of the various uses to which the instrument can be applied…Atha lent several microscopes for the purposes of the lecture, together with spectroscopes and polarimeters." J. W. Atha & Co were the London agents for the well-known German company Carl Zeiss, founded in 1846, and are still a leading player in optics technology today.

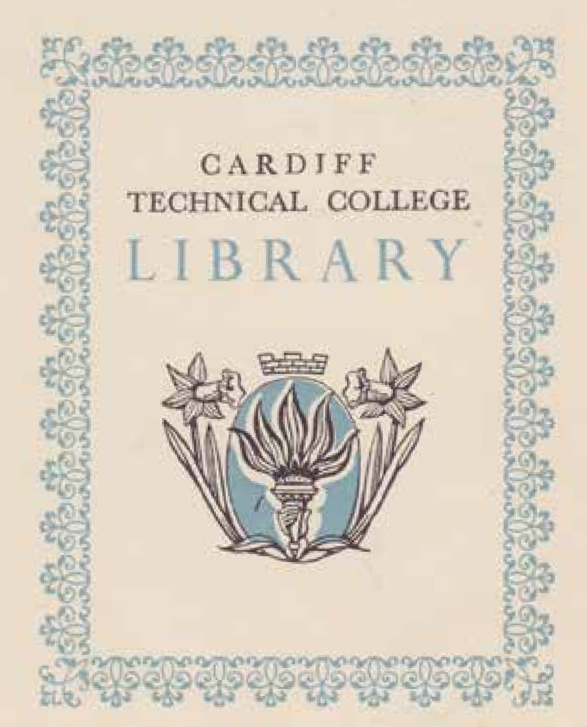
The focus of pharmacy education changed nationally during the 1920s, exemplified by developments in Cardiff. The PSGB Council proposed separating the Major or Pharmaceutical Chemist Exam from the Minor or Chemist & Druggist Exam. Part I of the Qualifying Exam would become the Preliminary Scientific Exam including practical exams in Physics and Botany. Part II would be the Chemist & Druggist Qualifying Exam. The higher Major Exam would become the Pharmaceutical Chemist Qualifying Exam. Once a student obtained the Preliminary Scientific Exam, they had to decide whether to do a one year course to become a Chemist & Druggist or a two year course to become a Pharmaceutical Chemist. An apprenticeship of 4,000 hours should be completed before the Minor Exam, or one of 2,000 hours for the Pharmaceutical Chemist course, which could be taken before or after the final exam. The other major change for candidates was that written exams were proposed in all subjects, and practical exams would be required in all subjects apart from Forensic Pharmacy. Oral exams were to be discontinued in everything apart from the Pharmacy paper for the Chemist & Druggist Qualifying Exam.

There was significant opposition to these suggestions from the PSGB membership. William Glyn-Jones, the PSGB Secretary and Registrar, and PSGB President, F. Pilkington Sargeant, travelled to regional meetings to present the rationale behind the changes, and each Branch was sent an explanatory memo. The two main objections were the suggested difference in apprenticeship hours between the Chemist & Druggist and Pharmaceutical Chemist regulations, and the fact that you would be able to become a Pharmaceutical Chemist without first being a Chemist & Druggist. But the new regulations came into force in August 1925, having been passed by a Special General Meeting and Privy Council then gave their consent. This rigorous overhaul met with approval in Cardiff. As Technical College Principal Charles Coles put it "in the minds of pharmacists, pharmacy has now become a real profession."

The Welsh College had been determined from the start to embrace the higher level PSGB Major Exam. At the beginning of the 1921-22 academic year, it was announced that a course for the Major Exam was "under consideration." By the following year, the Cardiff Technical Instruction Committee had decided to establish a full-time Major course at the College to start in October 1923 alongside the Qualifying course. The Committee confirmed its confidence in "the present staff of teachers being fully adequate for the teaching of the subjects, whilst the necessary equipment leaves nothing to be desired." The fees were set at the same rate as for the Qualifying Course, of £15 15s (£15.75) for the session (October to July). As an additional stimulus, Councillor H. M. Lloyd from Merthyr offered a prize of five guineas (£1.25) to the first student who successfully passed the "Major" direct from the College. Councillor Lloyd obviously took his mentoring role seriously, having spoken at the School's inaugural meeting on "Ideals in Pharmaceutical Education." He encouraged the students "to look ten years ahead, and warned them not to enter pharmacy for the sole objects of money-making but always to keep steadily before them an elevated conception and standard of the dignity and responsibility of their profession. Students who put their whole heart into their profession and were not content with just qualifying would gain the greatest possible happiness from their labours."

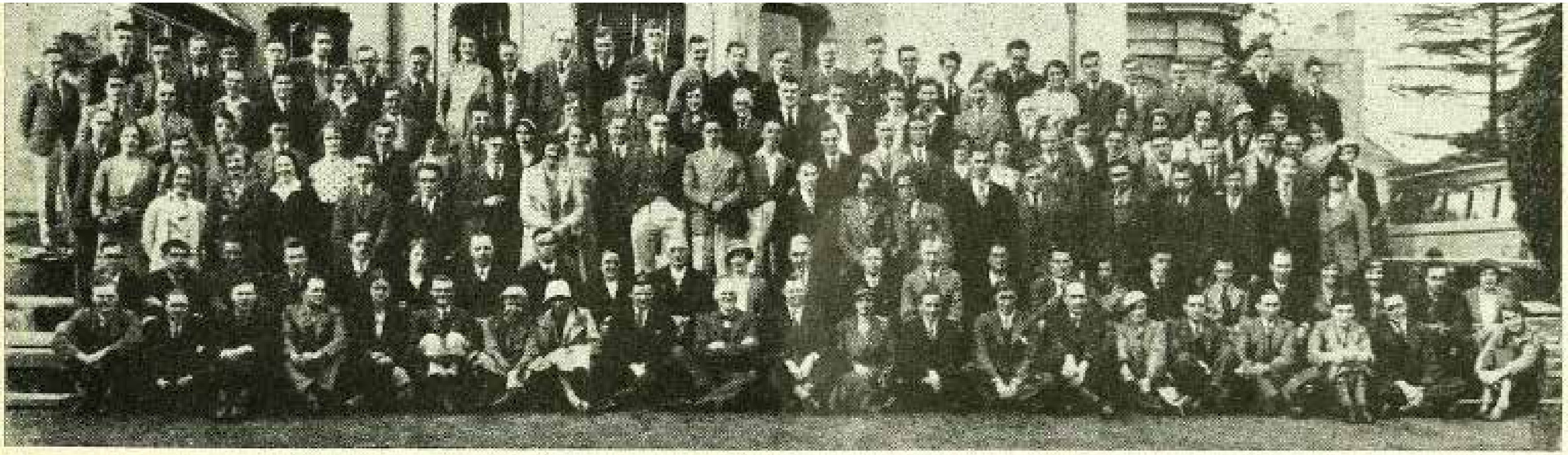
The School was in a strong position to support these aspiring pharmacists. Major Saville Peck, on his annual inspection on behalf of the PSGB, described its *materia medica* section as "the finest in the kingdom" and at the fourth inaugural meeting held on 8 November 1922, Technical College Principal, Charles Coles announced that the Institute of Chemistry had recognised the department for its Part I subjects, meaning that students passing Part I would be exempt from the Institute's exams in those subjects. The Principal recognised that this was "an enumeration of the exceptional facilities given by it [the college] for pharmaceutical education." Since the College had been established three years earlier, 77 students had qualified as Chemists & Druggists and 25 had qualified as dispensers.

Unfortunately, it was left to Principal Coles to announce at the following year's inaugural meeting in October 1923 that "It was to be regretted that no students had as yet applied to take up the Major course, which was now established." A £40 scholarship was set up (worth around £1,700 today), which included a maintenance grant, to encourage Major students, who would be expected to attend the School for three years, taking Part I in year one, Part II in year two and the Major Exam in year three.



This Cardiff Technical College Library bookplate survives in a volume of 1890 Additions to the British Pharmacopoeia *1885. (T. D. Turner)*

Nevertheless, for the coming academic year, the School had 20 full-timers working for both parts of the Qualifying Exam, 13 for Part I only, and three taking Part II, making a total student body of 36, plus eight preparing for Apothecaries' Hall exams. Principal Coles felt "This was considered very satisfactory in view of the fact that there were now no ex-Service students." The Principal was also satisfied with the 50% success rate in the PSGB exams from the previous year, which compared well with other schools.



STUDENTS FROM LEICESTER, BIRMINGHAM AND CARDIFF AT THE WORKS OF THE UNITED CHEMISTS' ASSOCIATION, LTD., CHELTENHAM (C. & D., MAY 27, p. 556). IN THE TWO FRONT ROWS ARE MESSRS. MILLER, EVANS, HEARLE AND GRIFFITHS (DIRECTORS), AND MESSRS. CHAMINGS (LEICESTER), THORPE (BIRMINGHAM) AND LLOYD (CARDIFF). MRS. MILLER AND MRS. LLOYD ARE ALSO PRESENT.

The Chemist and Druggist June 1933. (Chemist + Druggist)

In 1923, there are the first reports of outside visits to companies including British Drug Houses (BDH), Allen & Hanburys, and Parke Davis & Co. These visits continued through the following decades. In March 1932, Cardiff pharmacy students visited the laboratories of “Messrs Parke Davis and Co” at Hounslow and were treated to lunch, a complete tour of the works and an illustrated lecture on the manufacture of biological preparations. Pharmaceutical manufacturers hosted a number of pharmacy schools in this way, presumably viewing them as useful both for their reputation and future recruitment. The following year, the United Chemists’ Association Ltd. (UCAL) works in Cheltenham hosted a joint visit for around 150 students from Leicester, Birmingham and Cardiff schools of pharmacy. A tour of the works, a commemorative group photo and an “excellent lunch” were followed by a cricket match between Birmingham and Leicester, and a tour of the Cotswolds.

Professor Greenish, Dean of the PSGB school of pharmacy, presented the prizes in Cardiff in 1923. His address to the students emphasised “while the duties of the pharmacist were simple, his responsibilities to the public were great…it was of fundamental importance to have co-operation between the teachers and the students, and in the former respect the Welsh School of Pharmacy was exceptionally fortunate, as the teachers were men with a reputation for thoroughness and keenness in their work…” Although he seemed not to notice that one of the teachers was a woman, his praise for the School showed its qualities were being appreciated by those outside Cardiff. Margaret Buchanan, leading educationalist and the first woman to sit on the PSGB Council was the guest speaker at the Cardiff Chemists’ Dinner in the same year, and paid tribute to the complete training that the School provided for apprentices.

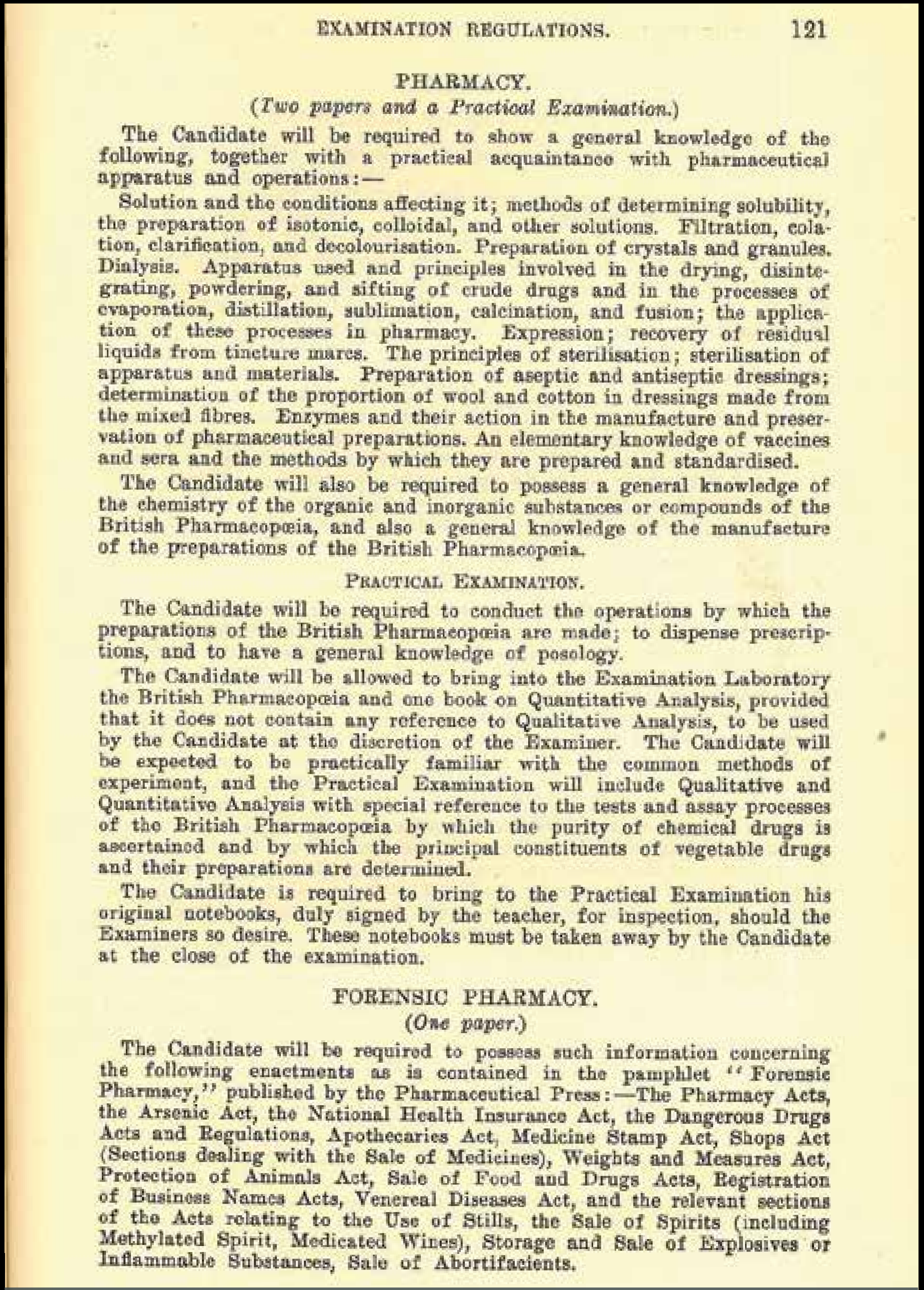
The following year, Mr Pilkington Sargeant, PSGB President, was the guest at the annual Cardiff Chemists’ Dinner stating: “Wales was extremely fortunate in having at Cardiff a technical college with so complete a pharmaceutical department.” This had been borne out by the impressive 1924 exam results: 100 per cent success in those taking Part II and 75 per cent of those taking Part I and II during the year compared with a national average of 30 per cent.

The first students to pass the Major Exam successfully were announced in 1925: R. Melville and Miss K. Metcalfe. Major students and staff had also submitted three research papers to the British Pharmaceutical Conference, and all had been accepted for publication. A section headed “Research Department” appeared in the prospectus for the first time this year stating: “Students who qualify as Pharmaceutical Chemists may be invited to co-operate in carrying out some original work upon Pharmaceutical problems.” The School also introduced revision courses for those that had failed their exams, for a fee of £5 and 5 shillings (£5.25): “a limited number of students can be accepted for these Courses of one term’s duration in practical work, commencing October, January and April.”

In the same year, a Board of Education (Welsh Department) report shows that the inspectors perceived a clear hierarchy of qualifications: the Minor Exam was the most important because it enabled “successful candidates to act as pharmacists and keep open shop”. The Major Exam was seen as an Honours course, and the Apothecaries Exam was offered as the most elementary course.

Although take up of the Major Exam was slow (only one Cardiff candidate passed the Major in 1926, three in 1927), the emphasis on research and higher education was clear. Mr Melhuish, who became PSGB President in 1930, spoke at the School’s inaugural meeting in November 1926 praising Cardiff as “an outstanding example” of a local education authority supporting higher education. This trend towards more academic qualifications was also reflected by the fact that the School, from October 1927, would only have 10 places for the Part I exam, expecting more students to be aiming for higher qualifications. From the academic year 1928-29, it was expected that future students would take a minimum of a two year course to qualify as a Chemist & Druggist.

The School was in a very strong position. At the inaugural meeting in November 1929, the Principal reported that the previous session’s successes were the best on record. 48 students (70%) had passed the PSGB Preliminary Scientific Exam compared with 40 per cent nationally, and 27 students had passed the Chemist & Druggist Qualifying Exam, representing 57 per cent compared with 31 per cent nationally. Every pharmacy student who had passed exams through the College in the last 10 years was in business or in a post. At a PSGB educational meeting held in Cheltenham in August 1928, Thomas Lewis even reported that Cardiff Technical College were considering the introduction of their own preliminary exam, to maintain the high standard of candidates entering the School.



EXAMINATION REGULATIONS. 121

PHARMACY.

(*Two papers and a Practical Examination.*)

The Candidate will be required to show a general knowledge of the following, together with a practical acquaintance with pharmaceutical apparatus and operations:—

Solution and the conditions affecting it; methods of determining solubility, the preparation of isotonic, colloidal, and other solutions. Filtration, colation, clarification, and decolourisation. Preparation of crystals and granules. Dialysis. Apparatus used and principles involved in the drying, disintegrating, powdering, and sifting of crude drugs and in the processes of evaporation, distillation, sublimation, calcination, and fusion; the application of these processes in pharmacy. Expression; recovery of residual liquids from tincture marcs. The principles of sterilisation; sterilisation of apparatus and materials. Preparation of aseptic and antiseptic dressings; determination of the proportion of wool and cotton in dressings made from the mixed fibres. Enzymes and their action in the manufacture and preservation of pharmaceutical preparations. An elementary knowledge of vaccines and sera and the methods by which they are prepared and standardised.

The Candidate will also be required to possess a general knowledge of the chemistry of the organic and inorganic substances or compounds of the British Pharmacopœia, and also a general knowledge of the manufacture of the preparations of the British Pharmacopœia.

PRACTICAL EXAMINATION.

The Candidate will be required to conduct the operations by which the preparations of the British Pharmacopœia are made; to dispense prescriptions, and to have a general knowledge of posology.

The Candidate will be allowed to bring into the Examination Laboratory the British Pharmacopœia and one book on Quantitative Analysis, provided that it does not contain any reference to Qualitative Analysis, to be used by the Candidate at the discretion of the Examiner. The Candidate will be expected to be practically familiar with the common methods of experiment, and the Practical Examination will include Qualitative and Quantitative Analysis with special reference to the tests and assay processes of the British Pharmacopœia by which the purity of chemical drugs is ascertained and by which the principal constituents of vegetable drugs and their preparations are determined.

The Candidate is required to bring to the Practical Examination his original notebooks, duly signed by the teacher, for inspection, should the Examiners so desire. These notebooks must be taken away by the Candidate at the close of the examination.

FORENSIC PHARMACY.

(*One paper.*)

The Candidate will be required to possess such information concerning the following enactments as is contained in the pamphlet “Forensic Pharmacy,” published by the Pharmaceutical Press:—The Pharmacy Acts, the Arsenic Act, the National Health Insurance Act, the Dangerous Drugs Acts and Regulations, Apothecaries Act, Medicine Stamp Act, Shops Act (Sections dealing with the Sale of Medicines), Weights and Measures Act, Protection of Animals Act, Sale of Food and Drugs Acts, Registration of Business Names Acts, Venereal Diseases Act, and the relevant sections of the Acts relating to the Use of Stills, the Sale of Spirits (including Methylated Spirit, Medicated Wines), Storage and Sale of Explosives or Inflammable Substances, Sale of Abortifacients.

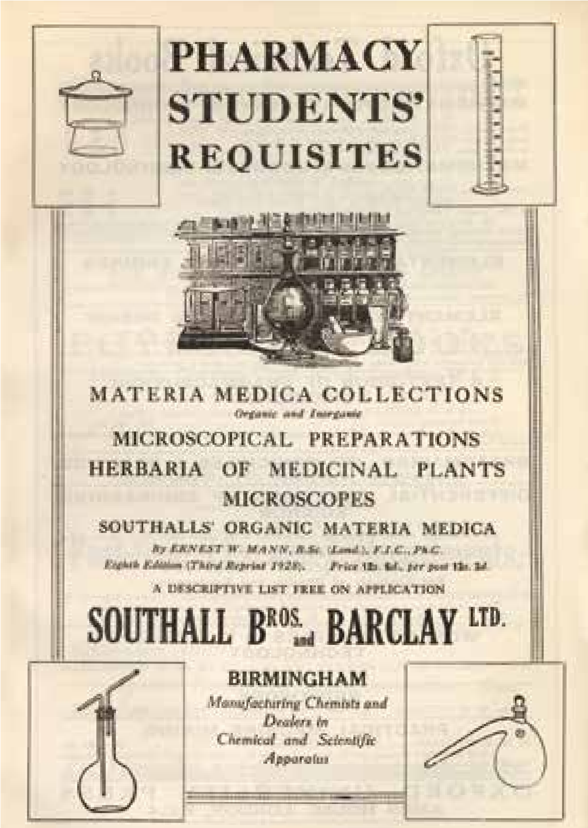
The PSGB annual Calendar provided full details of its exams. In 1929, the Major Exam syllabus included two written and one practical Pharmacy paper. (Royal Pharmaceutical Society Museum)

New pharmaceutical developments prompted educational changes throughout the 1920s and 1930s both at a national and local level. In spite of the economic depression, this was a time of growth for the pharmaceutical industry globally, with the discovery and development of vitamins, insulin, hormones and the sulpha-drugs. On 7 August 1925, the Therapeutic Substances Act was passed, recognising that a number of substances now existed for medicinal use which were neither poisons nor dangerous drugs, which were both covered by existing legislation. The Act regulated by licence the manufacture, but not the sale, of a limited number of products, the purity or potency of which could not be adequately controlled by chemical means. Such products included vaccines, sera, toxins, antigens and insulin. However, biology only featured in the PSGB syllabuses briefly, and only for the Major course which mentioned an “elementary knowledge of vaccines and sera.” Meanwhile Gerhard Domagk’s discovery of Prontosil in 1932 opened up an exciting new area of chemical antibacterial treatments.

Pharmacy legislation in Britain further regulated both the drugs and the profession. The Pharmacy and Poisons Act of 1933 established a Poisons Board to advise the Secretary of State, and introduced four schedules of poisons including those that were “prescription only.” The Act also gave the Pharmaceutical Society the enforcement powers, which led it to set up its inspectorate and Statutory Committee. For the public, the pharmacist’s role may not have seemed that different, but their advisory position was vital for people to navigate their way through the new medicines available whether in retail pharmacy or the hospital. This was clearly recognised at a local level: a joint meeting of the Cardiff Pharmaceutical Association and the Cardiff Division of the BMA in April 1927 had discussed “Mutual Relations between Prescriber and Pharmacist.” One of the pharmacists present stated that this was the first time there had been a joint meeting of this type in his 58 years associated with pharmacy.

In November 1930, Mr E. H. Simms of the PSGB Council, spoke at the School and expressed his personal view that Botany should “give place” to another subject, more relevant to a pharmacist’s training. He noted that Cardiff had a course in Zoology, and were already running preventive medicine lectures in Bacteriology, taught by W. Parry Morgan at the Medical School. Simms felt sure that knowledge of serums, insulin and various vaccines “would be invaluable to all pharmacists” and that the Welsh College of Pharmacy was in a good position: “He congratulated the School on having grown up to such an extent.” There was also the option to take a course leading to a PSGB qualification in Bacteriology, first included in the prospectus in 1929, and comprising 20 lectures and practical work, during the Michaelmas and Lent terms at the Cardiff and County Public Health Laboratory. It was taught by the Professor of Medicine, and covered topics including chemical analysis of urine, blood, cerebrospinal fluid, gastric contents and faeces, investigation of renal, hepatic and pancreatic efficiency, and milk analysis.

By 1934, the School was offering a new part-time diploma course in Bio-Chemical [sic] Analysis to be hosted in the medical unit at the Welsh National School of Medicine in Cardiff Infirmary. The course ran on Wednesday and Thursday afternoons during the Lent and Summer terms, at a fee of 10 guineas plus an incidental lab fee of one guinea (totalling £11.55 in decimal currency).



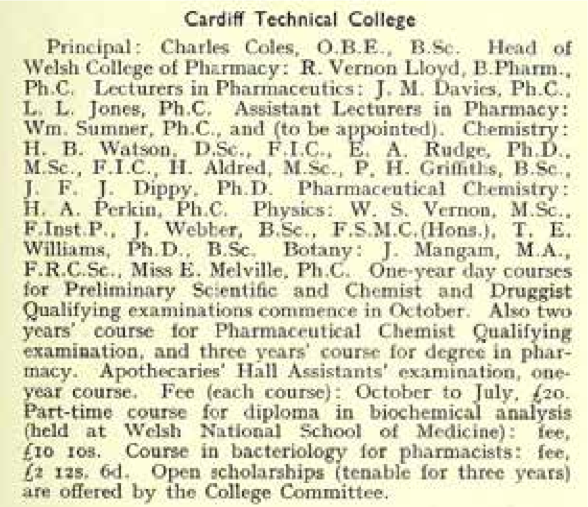
PHARMACY
STUDENTS’
REQUISITES

MATERIA MEDICA COLLECTIONS
Organic and Inorganic
MICROSCOPICAL PREPARATIONS
HERBARIA OF MEDICINAL PLANTS
MICROSCOPES
SOUTHALLS’ ORGANIC MATERIA MEDICA
By ERNEST W. MANN, B.Sc. (Lond.), F.I.C., Ph.C.
Eighth Edition (Third Reprint 1928). Price 12s. 6d., per post 13s. 3d.
A DESCRIPTIVE LIST FREE ON APPLICATION

SOUTHALL BROS. and BARCLAY LTD.

BIRMINGHAM
Manufacturing Chemists and
Dealers in
Chemical and Scientific
Apparatus

An advert for equipment from Southall Brothers and Barclay Ltd featured immediately inside the front cover of the Technical College’s prospectus for 1930-31. (Image courtesy of Cardiff University Special Collections and Archives)



Cardiff Technical College

Principal: Charles Coles, O.B.E., B.Sc. Head of Welsh College of Pharmacy: R. Vernon Lloyd, B.Pharm., Ph.C. Lecturers in Pharmaceutics: J. M. Davies, Ph.C., L. L. Jones, Ph.C. Assistant Lecturers in Pharmacy: Wm. Sumner, Ph.C., and (to be appointed). Chemistry: H. B. Watson, D.Sc., F.I.C., E. A. Rudge, Ph.D., M.Sc., F.I.C., H. Aldred, M.Sc., P. H. Griffiths, B.Sc., J. F. J. Dippy, Ph.D. Pharmaceutical Chemistry: H. A. Perkin, Ph.C. Physics: W. S. Vernon, M.Sc., F.Inst.P., J. Webber, B.Sc., F.S.M.C.(Hons.), T. E. Williams, Ph.D., B.Sc. Botany: J. Mangam, M.A., F.R.C.Sc., Miss E. Melville, Ph.C. One-year day courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations commence in October. Also two years' course for Pharmaceutical Chemist Qualifying examination, and three years' course for degree in pharmacy. Apothecaries' Hall Assistants' examination, one-year course. Fee (each course): October to July, £20. Part-time course for diploma in biochemical analysis (held at Welsh National School of Medicine): fee, £10 10s. Course in bacteriology for pharmacists: fee, £2 12s. 6d. Open scholarships (tenable for three years) are offered by the College Committee.

The School's listing in The Chemist and Druggist *on 18 August 1934 included the new bacteriology and biochemical analysis courses. (Chemist + Druggist)*

In 1935, the PSGB syllabus for the Qualifying Exam was changed at a national level to include Physiology, and a practical exam in Pharmacognosy. Physiology was also introduced into the Chemist & Druggist and Pharmaceutical Chemist exams, Botany was discontinued and Pharmacognosy was reduced. The subjects for the Pharmaceutical Chemist qualification were therefore altered to be Pharmaceutical Chemistry, Pharmacy, Physiology, Pharmacognosy and Forensic Pharmacy, which meant a more vocational content. It also allowed the first year of the higher course to be assimilated into the Chemist & Druggist course. In Cardiff, arrangements had been put in place for teaching Physiology and Pharmacology from 1934 under R. St. A. Heathcote at the Medical School.

The inclusion of more biology content and physiology finally provided all students with some understanding of recent therapeutic developments. Combined with a higher standard of knowledge of pharmaceutical chemistry, students were better trained to understand the action of drugs. In 1935, PSGB President Ernest Saville Peck reported that "These advances tend to a closer approximation of pharmacy to the altered conditions due to the progress made in medical science and should be conducive to the fuller recognition of the important place which pharmacy occupies in the health service of the Nation."

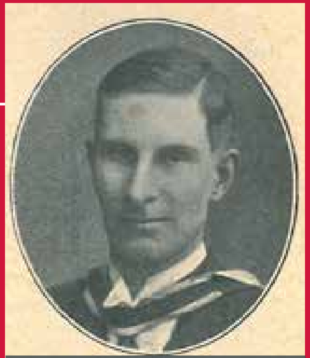
However, take-up for the new Biochemical Analysis diploma in Cardiff was very slow, with only two pharmacy students attending the class in its first year. The course was offered again in the following year, and by 1938, an advert for the School included that special part-time courses in Pharmaceutical Analysis, Biochemical Analysis, Bacteriology and Microscopy of Foods and Drugs "can be arranged." The latter enabled students to enter the Fellowship of the Institute of Chemistry Branch E (Food and Drugs) exam.

In fact, the broad range of courses available in the 1930s was impressive. From 1933, the School also offered Pre-Medical and Pre-Dental courses in Biology, Physics and Chemistry, for students wanting to go on to study Medicine and Dentistry at degree level. From 1935, all Pharmacy students had classes in Scientific French and German under C. M. H. Richardson, Diplome Superieur, of the Department of Commerce.

John F. Hunt from Cardiff remembered being a student at the School in the 1930s, following his registration with the Pharmaceutical Society to undertake his statutory two years' apprenticeship in 1932, something he had to delay because he was unable to pass the required French exam. During his apprenticeship, his employer let him leave work early at 6:45pm to go to evening classes twice a week, to study and practice Chemistry and Physics. He also attended Botany classes on a Wednesday evening between September and April. He started his Pharmacy Part I course in September 1935 paying £26 pounds for the year's fee, plus extra for books and chemical apparatus. Alongside studying, he also worked at the pharmacy between 6pm and 8pm on weekdays and all day Saturday to earn money to pay his family to live at home. Towards the end of February 1936, he gave up work to concentrate on his studies, finishing at College at 5pm, and then studying in the Cardiff Reference Library in the evenings. He also remembered saving hard for the £6 exam fee for the Part I exam, which he had to take in London. These exams lasted four or five days, and he stayed in a bed and breakfast. After success in the Part I exam, he studied for another year to pass the Part II and qualified as a Chemist & Druggist in June 1937.

Fred Dyer

1899-1962



Pharmaceutical Journal

On leaving school, Fred Dyer initially worked in pathological chemistry with the Chemical Research Association in London. Having become a pharmacy apprentice, he studied at the PSGB School where he was Senior Jacob Bell Scholar in 1919, and won the Council Silver Medal in 1921. He met his wife at the School, where she was also Jacob Bell Scholar. He passed the PSGB Qualifying Exam in 1920 and their Major Exam in 1921. He worked as Demonstrator in Pharmaceutics under Professor Greenish until 1923, when he was appointed Lecturer in Pharmaceutics at Cardiff where he remained until 1926. In 1925, he graduated BSc London (Hons) and was elected an Associate of the Institute of Chemistry. He took up the role of Assistant to Hugh Linstead, Secretary and Registrar of the Pharmaceutical Society in 1926.

However, he moved soon afterwards to become Head of the Pharmacy Department at Bradford Technical College. He returned to London as Special Lecturer in Pharmacology to the School of Pharmacy, University of London. In 1950, he was appointed deputy director of the Laboratory Animals Bureau of the Medical Research Council. He was a member of the Pharmaceutical Society's board of examiners, and of various subcommittees responsible for production of the *British Pharmaceutical Codex* and *Veterinary Codex*. He was also the co-author of a number of research papers on pharmaceutical and pharmacological subjects, and with J. W. Cooper *Dispensing for pharmaceutical students*, first published in 1928.

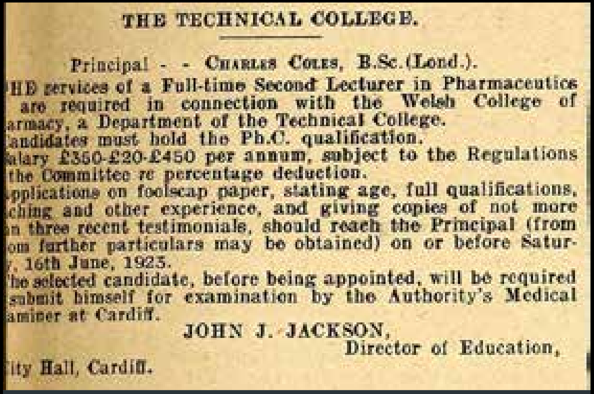
"He is a living obect-lesson as to the validity of the philosophy that a sound business and academic education and discipline are the keynotes of success, alike for the student and the post-graduate career of the practitioner."

"The best that could be found for their jobs": staff and facilities

The aspiration to offer the PSGB Major course prompted an increase in staffing and facilities. In 1923, the staff were listed as Thomas Lewis PhC, Head of Department; Fred J. Dyer PhC, Lecturer in Pharmaceutics, a new role; E. A. Rudge BSc AIC as Lecturer in Chemistry, with an Assistant Lecturer, H. Aldred MSc AIC; J. Webber BSc was a new arrival with responsibility for Physics, and Botany was taught by Freda McLean BSc from 1922 onwards. Mr Dyer had arrived with a recent BSc in Chemistry from London University having been the Bell Scholar at the PSGB school of pharmacy in 1919, and worked as a Demonstrator at the school in 1921 having won the Council silver medal. Mr W. B. Forbes BSc (Pharm) joined the staff as Lecturer in Pharmaceutical Chemistry during the academic year. Originally from Perth, he gained an MSc at Manchester University. Mr W. Somerville Vernon MSc.A.Inst.P also joined as Lecturer in Physics, and in 1925 J. Mangan MA FRCSc (Ireland) arrived as Lecturer in Botany, a post he went on to hold for twenty years.

In October 1926, it was announced that Mr Dyer would be leaving the School to take up a post as Assistant Secretary at the Pharmaceutical Society in London. J. Malcolm Davies PhC was appointed as Assistant Lecturer in Pharmacy, later clarified as Lecturer in Pharmaceutics. Having served his apprenticeship with W. Furnivall and Sons, City Road, Cardiff, Malcolm Davies had spent the past two and a half years managing the business of late Mr J. B. Thomas, Wellfield Road, Cardiff. He had been a student at the Welsh School in its first year.

> **"Curiously enough the three pharmaceutical lecturers, including Mr Lewis, are all Welsh, but they did not have their positions because they were Welsh, but because they were the best that could be found for their jobs."**
>
> Charles Coles, Cardiff Technical College Principal, February 1928



THE TECHNICAL COLLEGE.

Principal - - CHARLES COLES, B.Sc.(Lond.).

HE services of a Full-time Second Lecturer in Pharmaceutics are required in connection with the Welsh College of armacy, a Department of the Technical College.

andidates must hold the Ph.C. qualification.

alary £350-£20-£450 per annum, subject to the Regulations the Committee *re* percentage deduction.

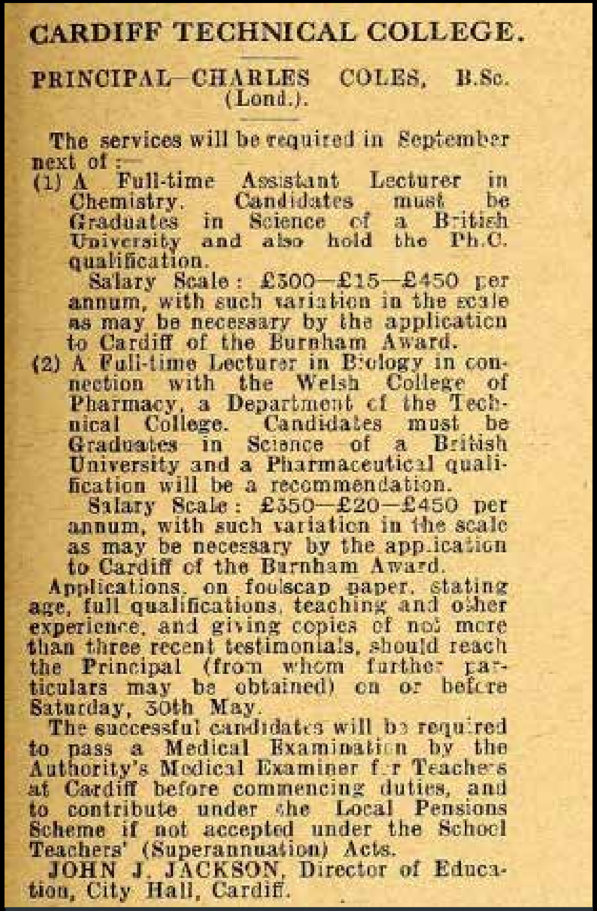
pplications on foolscap paper, stating age, full qualifications, ching and other experience, and giving copies of not more n three recent testimonials, should reach the Principal (from om further particulars may be obtained) on or before Satur-, 16th June, 1923.

he selected candidate, before being appointed, will be required submit himself for examination by the Authority's Medical aminer at Cardiff.

JOHN J. JACKSON,
Director of Education,

ity Hall, Cardiff.

The Chemist and Druggist, *9 June 1923. (Chemist + Druggist)*



CARDIFF TECHNICAL COLLEGE.

PRINCIPAL—CHARLES COLES, B.Sc. (Lond.).

The services will be required in September next of :—

(1) A Full-time Assistant Lecturer in Chemistry. Candidates must be Graduates in Science of a British University and also hold the Ph.C. qualification.

Salary Scale : £300—£15—£450 per annum, with such variation in the scale as may be necessary by the application to Cardiff of the Burnham Award.

(2) A Full-time Lecturer in Biology in connection with the Welsh College of Pharmacy, a Department of the Technical College. Candidates must be Graduates in Science of a British University and a Pharmaceutical qualification will be a recommendation.

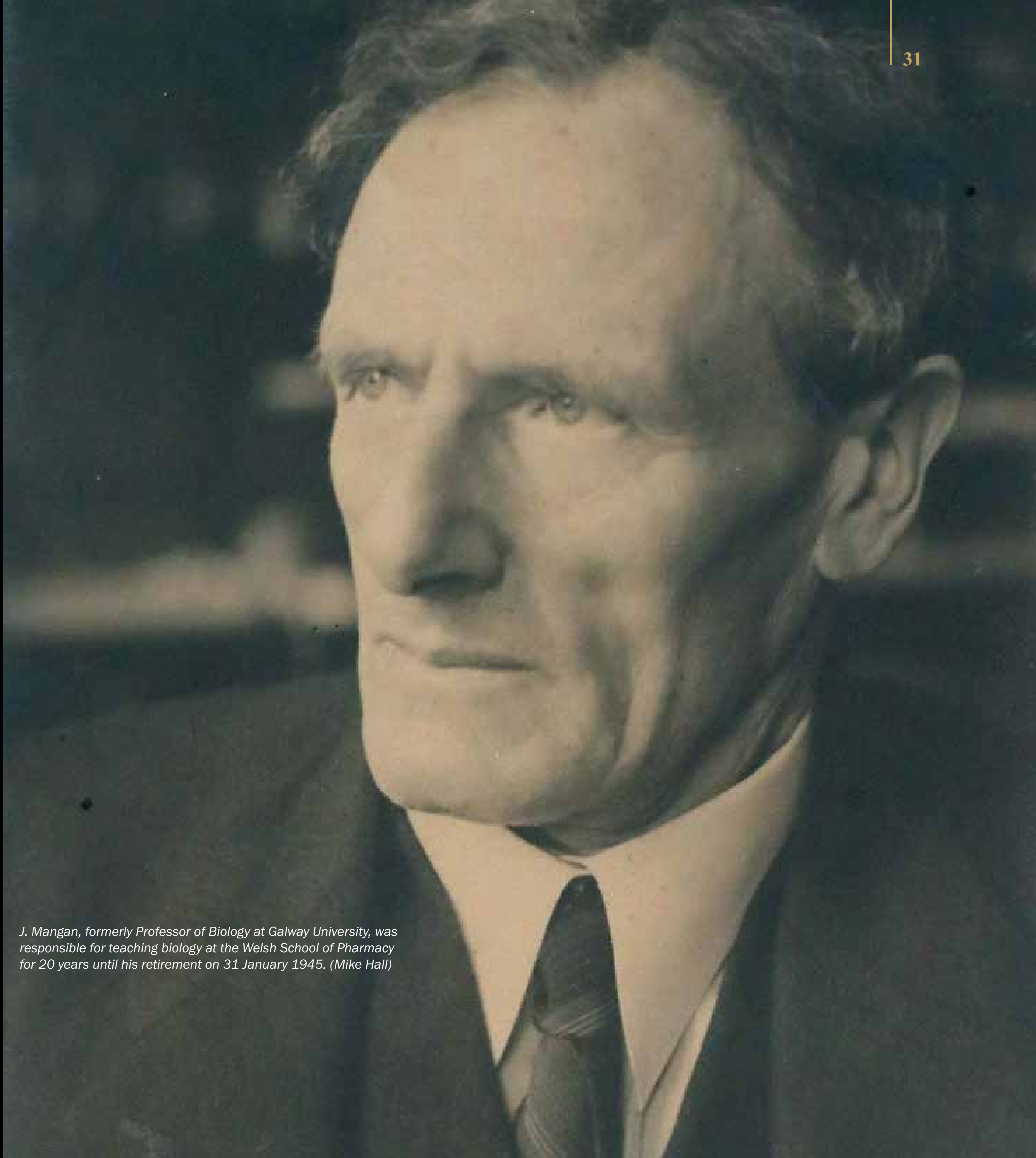
Salary Scale : £350—£20—£450 per annum, with such variation in the scale as may be necessary by the application to Cardiff of the Burnham Award.

Applications, on foolscap paper, stating age, full qualifications, teaching and other experience, and giving copies of not more than three recent testimonials, should reach the Principal (from whom further particulars may be obtained) on or before Saturday, 30th May.

The successful candidates will be required to pass a Medical Examination by the Authority's Medical Examiner for Teachers at Cardiff before commencing duties, and to contribute under the Local Pensions Scheme if not accepted under the School Teachers' (Superannuation) Acts.

JOHN J. JACKSON, Director of Education, City Hall, Cardiff.

The Chemist and Druggist, *16 May 1925. (Chemist + Druggist)*



J. Mangan, formerly Professor of Biology at Galway University, was responsible for teaching biology at the Welsh School of Pharmacy for 20 years until his retirement on 31 January 1945. (Mike Hall)

Rees Vernon Lloyd

1902-1988

School of Pharmacy

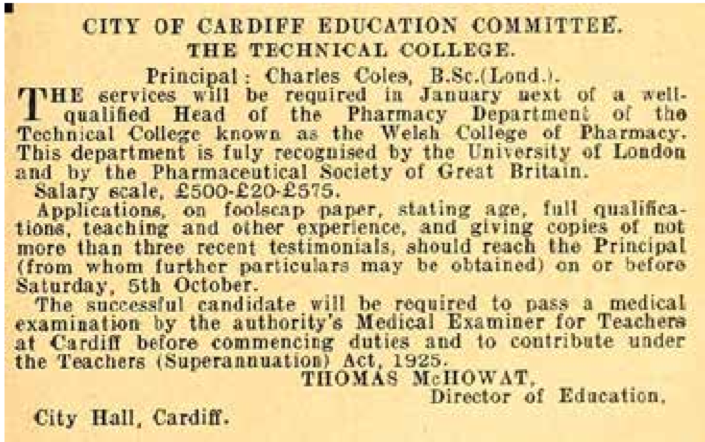
Rees Vernon Lloyd was born in South Wales, and received his early education at Pontypridd County School. Having served his apprenticeship in Pontypridd, he then spent two and a half years working in Muswell Hill. He was Fairchild scholar for Wales in 1923, and studied at the Pharmaceutical Society's School of Pharmacy as Senior Jacob Bell Scholar in 1924. He passed the PSGB Major Exam in 1926, and gained his BPharm from the University of London in 1929 whilst working at "the Square" as senior assistant in pharmacy, overseeing the examination dispensaries and acting as assistant to the board of examiners. In 1929, aged 27, he was appointed Head of the Welsh College of Pharmacy, starting his duties on 1 January 1930. His main task on appointment was to instigate a University of Wales pharmacy degree.

He developed an interest in the deterioration of medicines during storage, and gave talks around Wales and further afield on this and other topics.

In 1959, Vernon Lloyd was appointed Vice-Principal of the newly-created Welsh CAT, and remained Head of the Welsh School of Pharmacy. He retired in 1967, after 37 years in charge of the School. In 2010, the lecture theatre on the ground floor (Room 0.21) of the School was renamed the R. Vernon Lloyd Lecture Theatre in his memory.

Vernon Lloyd married Catherine Tickle, Chemist & Druggist, in her home town of Exeter in 1931. Their daughter Rosemary was born in 1936, and later married Paul Nicholls, Lecturer in Pharmacology at the School.

But although the staff numbers were growing, in 1924, 33 students from the 73 originally enrolled had to be refused because the School had reached the capacity of its facilities. From its opening in 1919, the Welsh College of Pharmacy occupied four primary rooms in the Technical College building, two lecture rooms and two labs on the middle floor, totalling around 2,000 square feet. There was also a dispensary, the Head of Department's office and a "rarely-used" manufacturing lab on the top floor. The labs were small and students had to be sub-divided into groups of maximum 15 people, with classes repeated which was not an efficient use of the staff's time. The arrangements were clearly inadequate. Principal Coles shared his expansion plans at the 1924 inaugural meeting: "it is hoped after the inspection by the Board of Education, which is shortly to take place, that it would be found possible to complete the building and give the Department the extra accommodation which was so badly needed." The inspection report confirmed the pharmacy facilities as insufficient, concluding that "to teach pharmacy properly two laboratories are required, one for dispensing and the routine methods employed in pharmacy and the other fitted to demonstrate pharmaceutical and manufacturing processes." The report also highlighted a practical problem with the *materia medica* museum collection "which…might serve the double purpose of a laboratory and museum, but the specimens must be kept under lock and key – to leave, for example, specimens of opium accessible to anyone who cares to meddle is to court disaster, this especially as the museum is used in the evenings for dress-making, literature and other classes."



CITY OF CARDIFF EDUCATION COMMITTEE.
THE TECHNICAL COLLEGE.
Principal: Charles Coles, B.Sc.(Lond.).

THE services will be required in January next of a well-qualified Head of the Pharmacy Department of the Technical College known as the Welsh College of Pharmacy. This department is fuly recognised by the University of London and by the Pharmaceutical Society of Great Britain.

Salary scale, £500-£20-£575.

Applications, on foolscap paper, stating age, full qualifications, teaching and other experience, and giving copies of not more than three recent testimonials, should reach the Principal (from whom further particulars may be obtained) on or before Saturday, 5th October.

The successful candidate will be required to pass a medical examination by the authority's Medical Examiner for Teachers at Cardiff before commencing duties and to contribute under the Teachers (Superannuation) Act, 1925.

THOMAS McHOWAT,
Director of Education.

City Hall, Cardiff.

The Chemist and Druggist, 21 September 1929. (Chemist + Druggist)

A year later, Principal Coles announced that the Board of Education had agreed an extension of the department in about one year's time, promising a new dispensing laboratory, manufacturing laboratory, a completely equipped biology laboratory and a lecture theatre. There was also talk of a bacteriology laboratory if it became necessary in the future. Meanwhile a waiting list for 1925-26 was put in place.

However, it wasn't until 15 February 1928 that the new wing at the Technical College was opened by the Mayor of Cardiff. The wing included a dispensary, biological laboratory, chemistry laboratory and research laboratory. The construction of a new manufacturing lab was also in progress. The following year it was announced that "the authorities were providing facilities for illustrating and teaching the preparation of serums and vaccines."

On 21 September 1929, an advert appeared in *The Chemist and Druggist* for a new Head of School. At the sessional meeting in November, Malcolm Davies was described as the current acting Head, and Rees Vernon Lloyd was introduced as the new Head of Department. The 'Personalities' column of *The Chemist and Druggist* on 7 December 1929 described Lloyd as BPharm, PhC and a Fairchild prizeman in 1923.

An undated photograph of the Technical College. (Glamorgan Archives)

A tragic incident happened at the College on 7 Feburary 1930. Dr F. W. Arnall, Head of Pure and Applied Chemistry, was carrying out a course of experiments with methyl iodide, silver oxide and dimethyl tartrate, when a glass tube exploded. Dr Arnall was taken to hospital but died three hours later. At the subsequent inquest, evidence was given by J. Malcolm Davies, Lecturer in Pharmaceutics. The account of the hearing in *The Chemist and Druggist* concluded: "The coroner, in summing up, said that this was another instance of a young life being given in the cause of science. A verdict was given stating that death was due to shock following injuries." Dr Arnall was only 33 years old, and had been conducting an experiment for a paper to be given at the British Pharmaceutical Conference, to be held in Cardiff later in the year, when he died. A later piece in the *Pharmaceutical Journal* reported that Dr Arnall's last words before the "bomb" tube burst in his hand were "Hurrah, it's finished!" He was part way through investigations "which had they been finished would have opened up new fields in pharmacy." Mr Ernest Rudge was appointed Head of Pure and Applied Chemistry and Eileen Melville as full-time Assistant Lecturer in Chemistry until the end of the session.

In 1930, the British Pharmaceutical Conference (BPC) was hosted in Cardiff, from 21 to 25 July, with the Technical College hosting the opening session and then most of the subsequent meetings. It was again, as 39 years earlier, a great opportunity to show off Cardiff and its pharmacy facilities to the pharmacy community at large. Of course, the existence of the School, only a twinkle in the local association's eye in 1891, was now the jewel in the crown. The accompanying promotion for the BPC described the Technical College as having more than 70 lecture rooms and labs, and over 5,000 students. Amongst this, "the reputation of the Pharmacy Department…stands deservedly high." In total, 370 pharmacists and their guests attended the Conference.

In 1937, a remarkably detailed inventory of the whole Technical School provides a full listing of every piece of equipment, apparatus and furniture allocated to each department. [See pages 42 and 43] This document indicates that the Pharmacy Department consisted of the Pharmaceutical Laboratory, Pharmacy Research Laboratory, Biology Lecture Room and Biology Laboratory (although presumably these were shared with the separate Biology Department), Pharmacognosy Laboratory, Pharmacy Museum and Library, Pharmacy Manufacturing Laboratory, Pharmacy Dispensing Room, and the Head of Department's Office. The inventory also details three cupboards, 48 lockers and 95 volumes of the *Pharmaceutical Journal* belonging to the School. The value of these assets was estimated in March 1937 as £4,013 (around £270,000 in today's money).

A pharmacy degree

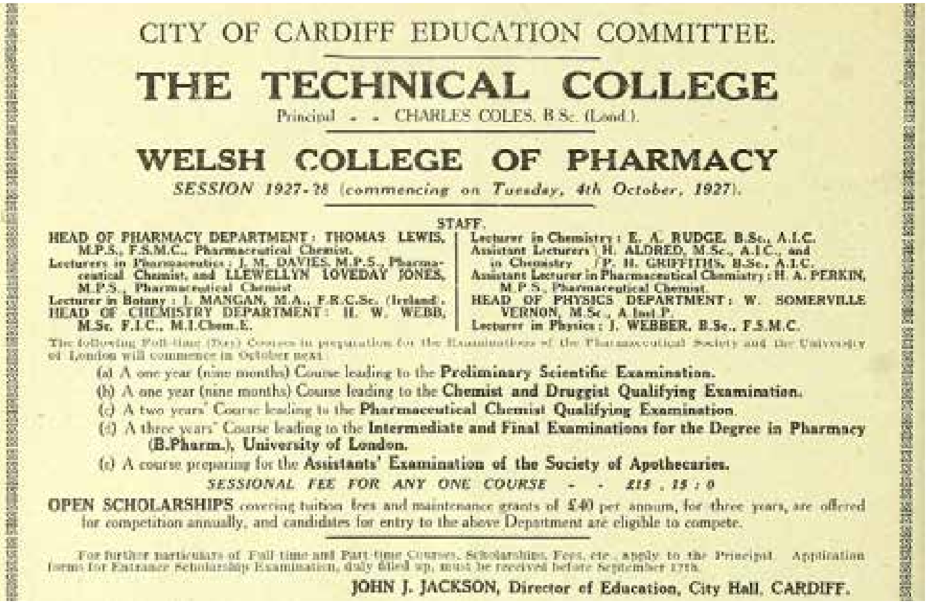
There were ambitions for the School to teach a degree in pharmacy right from its start. A report of an address given by South Wales Federation President Mr Benson Harries in November 1919 expressed his support of a pharmacy degree and "the promise of support from the principal of Cardiff University. An interesting discussion followed." At the following month's meeting in Haverfordwest, President Harries "pointed out that a great event in the history of pharmacy had occurred in the opening of the Welsh College of Pharmacy in Cardiff, and he expressed the hope that arrangements would be made for pharmacists to obtain a degree in science at the College." In fact, it was revealed that PSGB Education representative, Major Ernest Saville Peck had discussed the possibility of a pharmacy degree with the University College authorities when he visited in 1919.

But at this stage, although the PSGB had approved plans for a Bachelor of Science in Pharmaceutics in Manchester in 1904, and a BSc in Pharmacy in Glasgow in 1907, neither had resulted in a course due to lack of funding. The Society's School became the first to establish a pharmacy degree with an associated course in 1924, when final regulations were agreed with the University of London to set up an internal degree with the possibility of setting up an external degree immediately afterwards.

At the re-opening of the Welsh College of Pharmacy on 28 October 1925, Technical College Principal Charles Coles reported that "the College had intimated its intention of applying for recognition of the external BPharm Degree of the University of London when particulars became available." A year later, the department had been inspected by Sir Cooper Perry, Principal of the University of London, alongside Ernest Saville Peck representing the PSGB with the result that from September 1927, the department would be recognised for the external London BPharm. Principal Coles described this as "a unique distinction for Wales." Alongside Cardiff, the Technical Colleges of Nottingham and Glasgow were also approved for the London degree.

The London BPharm was offered for the first time in Cardiff in the 1927-28 academic year. In 1929, it was announced that the first two students had passed the intermediate Bachelor of Pharmacy (BPharm) Exam. By 1934, Cardiff was one of nine provincial centres for the external London exam, alongside Bradford, Brighton, Glasgow, Liverpool, Nottingham, Plymouth, Portsmouth and Wigan. The "local fee" payable to sit the exam as a Cardiff student was £2 2 shillings (£2.10 or around £105 today).

But the School's aspirations were higher. At its annual sessional meeting on 12 November 1930, Principal Coles "expressed the hope that the time would not be far distant when the University of Wales would give a chance to its young Welsh students by instituting a degree in pharmacy within the University." This ambition was certainly supported by local pharmacists. The February 1931 Cardiff Branch meeting forwarded a resolution to the Technical Instruction Committee "requesting them to take the necessary steps to secure this advantage for their students." The academic wheels turned slowly, and finally in October 1934, it was announced, at the opening of new laboratories of *materia medica* and pharmacology at the Welsh National School of Medicine, that the University would be asked to approve the granting of a Bachelor of Pharmacy degree. The degree was established by the University of Wales in 1936. It was welcomed across the country. A report of the annual dinner of the Anglesey, North Caernarfonshire and Colwyn Bay Branch at Bangor in March 1936 included an announcement by the speaker Principal Emrys Evans of University College of North Wales that the degree had been instituted: "He was glad that pharmacists had been putting their house in order educationally."



CITY OF CARDIFF EDUCATION COMMITTEE.

THE TECHNICAL COLLEGE

Principal - - CHARLES COLES, B.Sc. (Lond.).

WELSH COLLEGE OF PHARMACY

SESSION 1927-28 (commencing on Tuesday, 4th October, 1927).

STAFF.

HEAD OF PHARMACY DEPARTMENT: THOMAS LEWIS, M.P.S., F.S.M.C., Pharmaceutical Chemist.
Lecturers in Pharmaceutics: J. M. DAVIES, M.P.S., Pharmaceutical Chemist, and LLEWELLYN LOVEDAY JONES, M.P.S., Pharmaceutical Chemist.
Lecturer in Botany: J. MANGAN, M.A., F.R.C.Sc. (Ireland).
HEAD OF CHEMISTRY DEPARTMENT: H. W. WEBB, M.Sc. F.I.C., M.I.Chem.E.
Lecturer in Chemistry: E. A. RUDGE, B.Sc., A.I.C.
Assistant Lecturers in Chemistry: H. ALDRED, M.Sc., A.I.C., and P. H. GRIFFITHS, B.Sc., A.I.C.
Assistant Lecturer in Pharmaceutical Chemistry: H. A. PERKIN, M.P.S., Pharmaceutical Chemist.
HEAD OF PHYSICS DEPARTMENT: W. SOMERVILLE VERNON, M.Sc., A.Inst.P.
Lecturer in Physics: J. WEBBER, B.Sc., F.S.M.C.

The following Full-time (Day) Courses in preparation for the Examinations of the Pharmaceutical Society and the University of London will commence in October next:

(a) A one year (nine months) Course leading to the **Preliminary Scientific Examination.**
(b) A one year (nine months) Course leading to the **Chemist and Druggist Qualifying Examination.**
(c) A two years' Course leading to the **Pharmaceutical Chemist Qualifying Examination.**
(d) A three years' Course leading to the **Intermediate and Final Examinations for the Degree in Pharmacy (B.Pharm.), University of London.**
(e) A course preparing for the **Assistants' Examination of the Society of Apothecaries.**

SESSIONAL FEE FOR ANY ONE COURSE - - £15 : 15 : 0

OPEN SCHOLARSHIPS covering tuition fees and maintenance grants of £40 per annum, for three years, are offered for competition annually, and candidates for entry to the above Department are eligible to compete.

For further particulars of Full-time and Part-time Courses, Scholarships, Fees, etc., apply to the Principal. Application forms for Entrance Scholarship Examination, duly filled up, must be received before September 17th.

JOHN J. JACKSON, Director of Education, City Hall, CARDIFF.

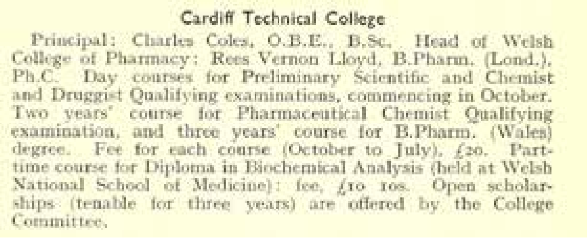
The College's advert in The Chemist and Druggist *on 13 August 1927 promoted the opportunity to study for the University of London BPharm for the first time. (Chemist + Druggist)*

> **"The average Chemist and Druggist could not become a bachelor of pharmacy, but the entry of those degree men into their ranks in the future would improve the status of the profession generally.. "**
>
> Thomas Lewis, Head of Welsh College of Pharmacy, and President of the Cardiff Pharmacists' Association, 4 December 1926

The *University of Wales Calendar* for 1937-38 is the first to include the Baccalaureus in Pharmacia. The full regulations are provided with the explanation that “For the provision of courses of instruction for the degree of B.Pharm., the Technical College, Cardiff, is associated with the Welsh National School of Medicine, in accordance with a scheme approved by the University.” The course consisted of two parts over three years: the Preliminary which must be taken over not less than one year, followed by the Final over not less than two years. For the Preliminary part, students must take Physics, Chemistry, Botany and Zoology in a “Constituent College.” There is an assumption in the regulations that this will be the University College of South Wales and Monmouthshire. If there is “lack of accommodation”, candidates can register for a degree at the Welsh National School of Medicine and “as a temporary measure” take these Intermediate courses at the Welsh College of Pharmacy, Technical College, Cardiff. The final part of the course is studied in conjunction with the Welsh National School of Medicine over two years. Fifteen per cent of the course was spent with the medical students, and 85 per cent in the Welsh College of Pharmacy. Academic control over the degree was exercised by a subcommittee made up of representatives from the Faculty of Medicine, the Board of Studies in Pharmacy and the University with staff from the medical school, the Technical College and the Welsh College of Pharmacy on this board. Looking back, Cardiff Technical College Principal Dr A. Harvey described the BPharm as “strikingly successful”, but very much dependent on goodwill between staff in the institutions. The final university exams were in Pharmaceutics, Bacteriology, Pharmacognosy, Pharmaceutical Chemistry, and Pharmacology (including Histology, Bio-Chemistry [sic], and Applied Physiology). There was also a practical exam in Dispensing. On graduation, BPharm (Wales) students would be entitled to wear a hood of “shot silk of saxe blue.”

The *Calendar* also gives details of the examiners: A .O. Bentley of Nottingham for Pharmaceutics, G. R. A. Short of London for Pharmacy and T. Tickle of Exeter for Pharmaceutical Chemistry. The internal examiners are listed as R. Vernon Lloyd for Pharmaceutics and Pharmacognosy, alongside J. Malcom Davies, plus a team of advisory examiners featuring a number of the School’s staff: LL .L Jones, W. Sumner, H. A. Perkin, H. B. Watson and A. G. Fishburn.

Ten scholarships covering tuition fees and maintenance grants of £40 p.a. for three years were advertised in September 1937, a significant extension of the original single annual grant for a Major student. These ten bursaries were for those intending to apply for the degree course or the Pharmaceutical Chemist diploma. As at other pharmacy schools in this period, in Cardiff the degree course would be taught alongside the diploma. Some elements of the course were also taught in the then Institute of Preventative Medicine at the Welsh National School of Medicine.



Cardiff Technical College

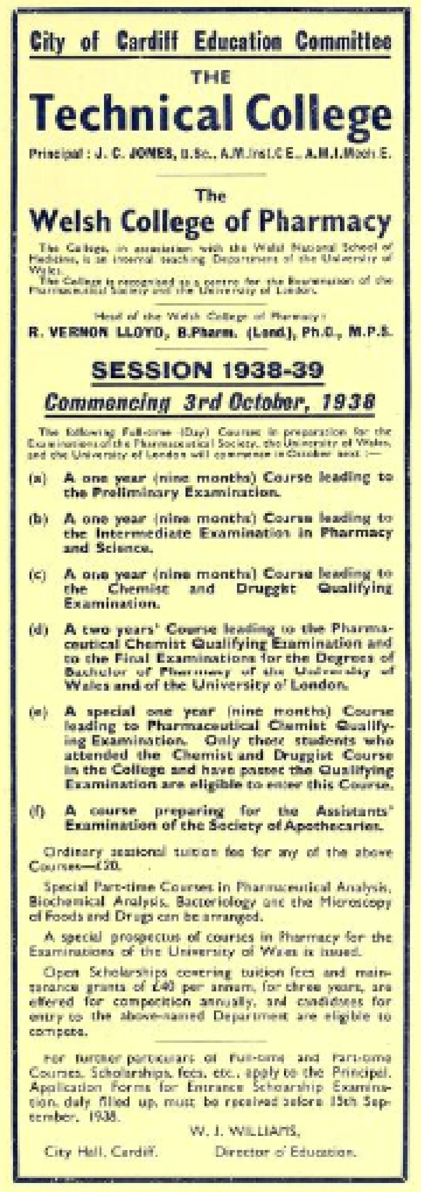
Principal: Charles Coles, O.B.E., B.Sc. Head of Welsh College of Pharmacy: Rees Vernon Lloyd, B.Pharm. (Lond.), Ph.C. Day courses for Preliminary Scientific and Chemist and Druggist Qualifying examinations, commencing in October. Two years' course for Pharmaceutical Chemist Qualifying examination, and three years' course for B.Pharm. (Wales) degree. Fee for each course (October to July), £20. Part-time course for Diploma in Biochemical Analysis (held at Welsh National School of Medicine): fee, £10 10s. Open scholarships (tenable for three years) are offered by the College Committee.

The College’s listing in The Chemist and Druggist on 15 August 1936 included the University of Wales BPharm for the first time. (Chemist + Druggist)

An editorial in the *Pharmaceutical Journal* on 4 September 1937 clarified the qualification with respect to the PSGB Register. The Registrar of the University of Wales had applied to the Society for approval of regulations to allow its graduates to be exempted from the PhC Qualifying Exam. This had been given, with the condition that, as with all other pharmacy graduates, Welsh students must also pass the Society’s exam in forensic pharmacy, have attained 21 years of age and show that they had completed the required apprenticeship to be granted a certificate of qualification.

The first graduates of the BPharm (Wales) are given in the 1939-1940 *University of Wales Calendar* as Frederick Ernest Evans, Kenneth Hailstone Handy, Stanley Thomas Owen and Enoch Philip Stevens. It becomes harder to follow the subsequent graduates as the Calendars are not published continually through the Second World War.

However, in his memoirs Peter Lindley recorded that he was in the second cohort of students to take the new degree. Following a three year apprenticeship with Frank Edwards Ltd on Cardiff Road, Llandaff, he started at the School in 1937. Lindley remembered that the course included a concentration on pharmaceutics such as making pills and suppositories, wrapping powders and filling cachets. He also recalled organic and pharmaceutical chemistry courses, alongside pharmacognosy. Interestingly, he also registered to take the University of London External Degree, which continued to be taught in the same class as the Welsh degree course, but was prevented from taking it as the finals for each University overlapped by one day. Wartime constraints meant that he was unable to sit the London exam at a later date. He was awarded the degree in 1940, one of five successful students alongside Ms S. G. Davis, C. Morris, G. Harries, and Mr Stock. Lindley was awarded his year’s Hagon Medal for best student, something he found out while at sea on active service.



City of Cardiff Education Committee

THE

Technical College

Principal: J. C. JONES, B.Sc., A.M.Inst.C.E., A.M.I.Mech.E.

The

Welsh College of Pharmacy

The College, in association with the Welsh National School of Medicine, is an internal teaching Department of the University of Wales.

The College is recognised as a centre for the Examination of the Pharmaceutical Society and the University of London.

Head of the Welsh College of Pharmacy:

R. VERNON LLOYD, B.Pharm. (Lond.), Ph.D., M.P.S.

SESSION 1938-39

Commencing 3rd October, 1938

The following Full-time (Day) Courses in preparation for the Examinations of the Pharmaceutical Society, the University of Wales, and the University of London will commence in October next :—

(a) **A one year (nine months) Course leading to the Preliminary Examination.**

(b) **A one year (nine months) Course leading to the Intermediate Examination in Pharmacy and Science.**

(c) **A one year (nine months) Course leading to the Chemist and Druggist Qualifying Examination.**

(d) **A two years' Course leading to the Pharmaceutical Chemist Qualifying Examination and to the Final Examinations for the Degrees of Bachelor of Pharmacy of the University of Wales and of the University of London.**

(e) **A special one year (nine months) Course leading to Pharmaceutical Chemist Qualifying Examination. Only those students who attended the Chemist and Druggist Course in the College and have passed the Qualifying Examination are eligible to enter this Course.**

(f) **A course preparing for the Assistants' Examination of the Society of Apothecaries.**

Ordinary sessional tuition fee for any of the above Courses—£20.

Special Part-time Courses in Pharmaceutical Analysis, Biochemical Analysis, Bacteriology and the Microscopy of Foods and Drugs can be arranged.

A special prospectus of courses in Pharmacy for the Examinations of the University of Wales is issued.

Open Scholarships covering tuition fees and maintenance grants of £40 per annum, for three years, are offered for competition annually, and candidates for entry to the above-named Department are eligible to compete.

For further particulars of Full-time and Part-time Courses, Scholarships, fees, etc., apply to the Principal. Application Forms for Entrance Scholarship Examination, duly filled up, must be received before 15th September, 1938.

W. J. WILLIAMS,

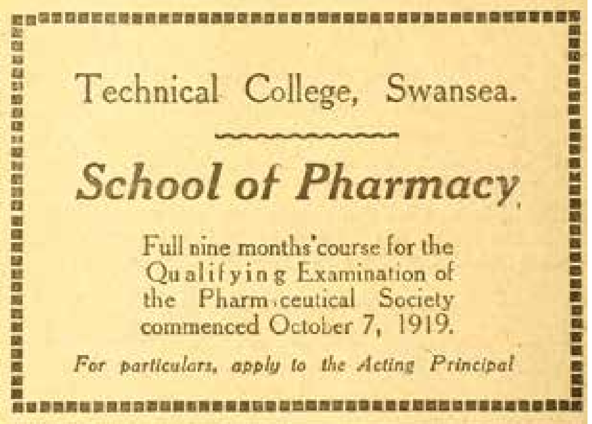
City Hall, Cardiff. Director of Education.

An advert in The Chemist and Druggist *in August 1938 listed all of the available courses. (Chemist + Druggist)*

“Anxious for the welfare of the College”: local pharmacy support

The School was strongly supported by the local pharmacy community. The Pharmacy Advisory Committee, one of ten in place at the Technical College, initially consisted of six members from the Technical College Committee and six from the South Wales and Monmouthshire Federation. There was also a great deal more informal support for both staff and students. In March 1923, Mr Hagon and Mr Johnson were invited by the Technical College to speak to students about pharmacy education, a visit that was reported in both the *Pharmaceutical Journal* and *The Chemist and Druggist*. Whether a particular incident, or seemingly waning enthusiasm from the students had prompted the invitation is not made clear, but in their talk “particular stress was laid upon the facts that the pharmacists throughout South Wales particularly were interested in and anxious for the welfare of the College, and at all times evinced a keen interest in the work accomplished there…Both speakers appealed to the students for loyalty, and exhorted them to throw themselves whole-heartedly into their work – to the credit of themselves firstly, and incidentally to the teachers and the College at which they attended.”

The South Wales and Monmouthshire Federation also supported pharmacy education more broadly in Wales. When, in 1922, there appeared to be the likelihood of the Welsh language being lost from the optional subjects in the PSGB Preliminary Exam, the Federation wrote immediately to the PSGB President to secure its reinstatement, having been responsible for its inclusion in the first place. The debate continued, with an inappropriate satirical report in *The Chemist and Druggist*’s Xrayser column on 13 January 1923 stating “the Welsh Language is, of course, a butt for the dull-witted to break their shafts upon, and it is creditable to the Council that Mr Lloyd’s motion for including it in the syllabus of the Preliminary examination was received sympathetically and with only the minimum of humorous comment.” Plans for a Welsh Pharmaceutical Society to publish a Pharmacopoeia of Wales, raising the need for bilingual examiners, were put forward in a letter to the *Pharmaceutical Journal*. The reality was that, although the number of Welsh speakers in the country was in serious decline, in the weekly job adverts at the back of each *Chemist and Druggist*, there were plenty of posts requiring Welsh speakers and/or Welsh experience. In 1925, a report of the PSGB Liverpool branch showed that the debate continued with particular resonance in North Wales: “Mr H. Humphreys Jones pleaded, amid applause, for the recognition of the Welsh language and of Welsh-speaking pupils from Welsh-speaking districts.” It wasn’t until April 1925 that it was confirmed that Welsh would continue to be included in the Preliminary Exams.



Technical College, Swansea.

School of Pharmacy

Full nine months' course for the
Qualifying Examination of
the Pharmaceutical Society
commenced October 7, 1919.

For particulars, apply to the Acting Principal

The Chemist and Druggist *11 October 1919.*
(Chemist + Druggist)

Of course there were Welsh students studying pharmacy in locations other than Cardiff, not least the Swansea school that was established in 1920 as part of the Municipal Technical College and operated until 1930. Although in a 1921 prospectus, the Cardiff school was described as “The School of Pharmacy (For Wales and Monmouthshire)”, in practical terms this was not convenient for residents of North Wales. Liverpool School of Pharmacy, founded in 1849 by local chemists and druggists was a natural focus. It was the last surviving private pharmacy school in the UK until 1953 when it merged with the Regional College of Technology. In 1923, *The Chemist and Druggist* reported that the South of England College of Pharmacy had a Welsh choir, performing songs composed by some of its Welsh students. In July 1923, the British Pharmaceutical Conference, held in London, featured a Welsh-themed concert organised primarily by William Glyn-Jones on behalf of the Welsh PSGB members, and attended by the Prince of Wales.

Discussion at the Federation meetings held in Carmarthen and Barry in 1922 and 1923 touched on the wider challenges of pharmacy education for those unable to attend the Cardiff school. A proposed requirement that apprentices pass the PSGB Preliminary Exam prior to starting their apprenticeship was deemed unrealistic. In some areas, there were no evening classes to take on subjects such as botany, chemistry and physics. A suggestion that the Federation Secretary could write to Directors of Education in such towns to suggest that classes should be formed met with some success as a Federation meeting in Barry in February 1923 heard that evening classes had been established in Llanelly [sic] and Haverfordwest in chemistry, physics and botany mainly due to the efforts of the Federation acting with secretaries of Carmarthenshire and Pembrokeshire Associations. Discussions about the establishment of a scholarship also encouraged support for the award to be open to all pharmacy students, not just those studying in Cardiff.

However, due to the establishment of PSGB regional branches, the Federation was wound up in June 1923, with a trust fund established to provide medals annually to both the Welsh College of Pharmacy and the Pharmacy Department at Swansea Technical College. Temporary provision was made through the Retail Pharmacists’ Union for the Cardiff school’s advisory committee until the PSGB branch structure was in place. Such was the continued expectation of involvement in the School by local pharmacists, that in November 1925: “Dissatisfaction was expressed at the appointment of a new member of the Advisory Committee of the Welsh College of Pharmacy without first consulting the Cardiff Branch.” When the Cardiff Pharmacists’ Association was also amalgamated with the PSGB Branch in 1929, the office of secretary to the Welsh College of Pharmacy Advisory Committee was permanently vested in the Branch secretary.

> **“The success of the Welsh College of Pharmacy was largely due to the untiring efforts of the Advisory Committee of Pharmacists, some of whom came long distances at their own expense in order to attend the meetings.”**
>
> Mr L. Moreton Parry, Pharmaceutical Society Vice-President, October 1928

The local pharmacy associations and the overarching Federation also provided ongoing support and incentives for students at the School through their medals and prizes. Silver and bronze medals were first presented to the inaugural year’s intake in 1920, noted as costing the Federation £15 because they had to have the dies made. They were awarded to the highest scoring candidates in an exam, superintended by the Federation President. The first recipients in 1920 were Mr S. B. Edwards who received the silver medal, and Mr John Salmon who was awarded the bronze medal. The Cardiff Association’s President’s prize to part-time students went to Miss Mary E. Johnson who was also awarded honorary membership of the Association as “the first lady to pass the “Minor” from Cardiff College.” Originally with practical and oral papers, it became a written paper and a practical from 1921, with book prizes introduced alongside the existing medals.

In 1924, the Cardiff Pharmacists’ Association offered a new silver medal to be presented annually to the best student selected by fellow students. It was called the Albert Hagon Medal to honour the eminence of Mr Hagon, and would be paid for by an endowment fund subscribed to by Federation members.

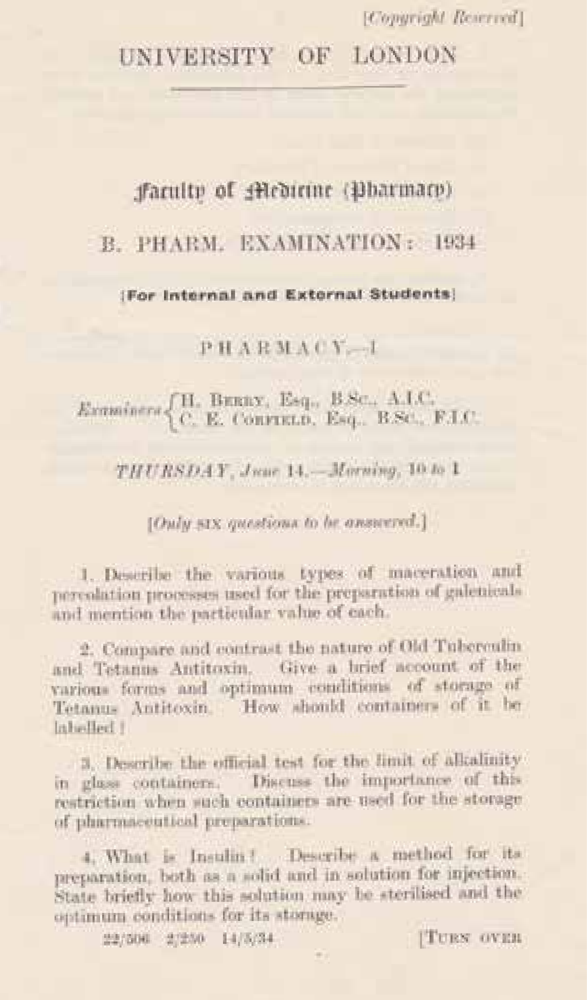
In 1996, the School received a personal insight into the Hagon Medal when E. J. Willis, recipient of the Medal in 1932, donated the letter which awarded him the prize, plus the regulations that accompanied it at the time. Four students were eligible for the award and the student body voted for the student best fitted to receive the medal:

“The Students eligible to vote should vote for that Student who seems to possess the qualities likely to make the best Pharmacist, that is to say, Self-respect, independence, strength of character and public spirit, and whose influence in after life is likely to be for the betterment and advancement of the profession of a Pharmacist and its members.”

Mr Willis recounted his circumstances, as one of three children in a very poor family, whose mother took the local doctor’s advice to find him a pharmacy apprenticeship in order to give him a good career. Mr Willis entered the School having started an apprenticeship with Mr Prosser at 14 Broadway, Cardiff. He remembered: “At that shop I read everything I could find on pharmaceutics, and worked at the shop 7 days a week so that I might find more in Martindale, BPC, etc. I also worked at the Library in town after days at the ‘Tech’. The result was that I got the Hagon Medal, and it gives me much joy that I was working in London at the time of the presentation, and that she [his mother] accepted it on my behalf. It must have given her such pride to be able to do this. I owe my mother so much, which I did not realise until too late.”

When Albert Hagon died in 1933, the eponymous medal continued in his memory: “In appreciation of his services to local pharmacy and especially to the Welsh College of Pharmacy.”

Cardiff students also achieved success in this period beyond the local prizes. At a March 1935 Branch meeting, Mr Alec S. Johnson, member of the Pharmacy Advisory Committee, not only reported that Edna Dally had won the Branch’s bronze medal and Hagon medal, but that Colin Melville and Ruben Wien had won the PSGB Herbarium Silver Medal and Ransom Research Fellowship, respectively. The Ransom Research Fellowship was endowed originally by Francis Ransom who worked on belladonna, and was President of the British Pharmaceutical Conference in 1910. The Fellowship, established in 1916, was an award of £200 over two years.



[Copyright Reserved]

UNIVERSITY OF LONDON

Faculty of Medicine (Pharmacy)

B. PHARM. EXAMINATION: 1934

[For Internal and External Students]

PHARMACY.—I

Examiners { H. BERRY, Esq., B.Sc., A.I.C.
C. E. CORFIELD, Esq., B.Sc., F.I.C.

THURSDAY, June 14.—Morning, 10 to 1

[Only SIX *questions to be answered.]*

1. Describe the various types of maceration and percolation processes used for the preparation of galenicals and mention the particular value of each.

2. Compare and contrast the nature of Old Tuberculin and Tetanus Antitoxin. Give a brief account of the various forms and optimum conditions of storage of Tetanus Antitoxin. How should containers of it be labelled ?

3. Describe the official test for the limit of alkalinity in glass containers. Discuss the importance of this restriction when such containers are used for the storage of pharmaceutical preparations.

4. What is Insulin ? Describe a method for its preparation, both as a solid and in solution for injection. State briefly how this solution may be sterilised and the optimum conditions for its storage.

22/506 2/250 14/5/34 [TURN OVER

With its questions about antitoxins, insulin and pituitary extract, this 1934 University of London BPharm Pharmacy exam, tested students’ knowledge of current developments. (UCL School of Pharmacy Library)

The Park Hotel on Queen Street was the location of the Whitehall Rooms, a popular venue for dinners and dances. (Cardiff Libraries)

Student life

The first insight into student life beyond lectures and labs is given by a report in the *Pharmaceutical Journal* on 13 March 1920 which describes the St David's Day celebrations in the College's assembly hall. A musical programme was contributed by students and friends, with Mr Rudge, Lecturer in Botany and Chemistry, playing a key role. The report stated "The Male Voice Party made its debut with several part songs, which were rendered in excellent style. The chef d'oeuvre of the evening was a humorous sketch entitled "Packing." The leading role – Mr Chugwater, the Irritable Husband – was played by E. A. Rudge Esq. B.Sc., who was ably supported by Miss Mona Long, and H. W. Webb, Esq. M.Sc. A.I.C. At the conclusion of the performance Mr Rudge was presented with a huge bouquet of leeks – a joke which, in the language of the music-hall, "brought the house down." Dancing and games occupied the rest of the evening, which was concluded with the National Anthem at midnight." The annual St David's Day rag was described as a "red-letter day" in 1921:

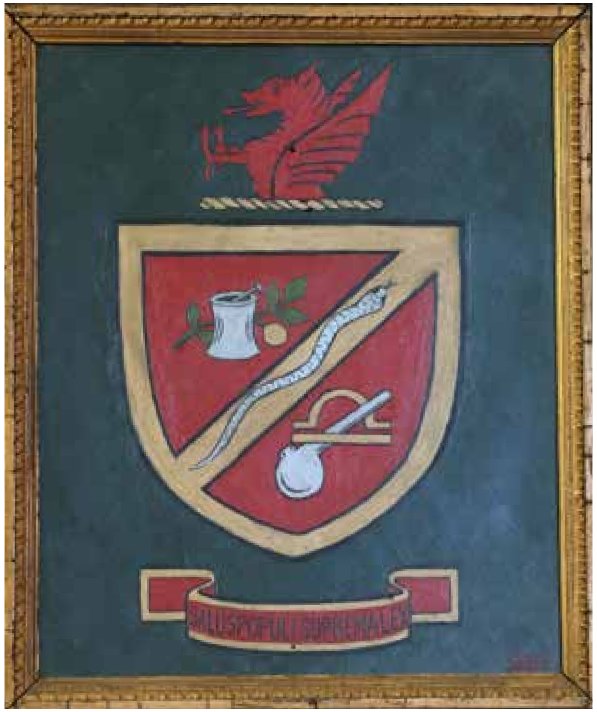
"Well disguised by the aid of suitable costumes and grease-paints, they [the students] paraded the streets of the city, making a collection (which realised £40) en route in aid of the Lord Mayor's Distress Fund." As part of the festivities, Ninian Park was lent by Cardiff City Football Club to host an annual match between the Technical College and the University medical students, which the Technical College won 2-1. There was even a formal dance in the evening.

Although the prospectus for the College in 1921 does not list any society or club specifically for pharmacy students, in the School's second year some pharmacy-focused extra-curricular activities were established. A Debating Society was set up in conjunction with the Students' Association to invite prominent pharmacists from South Wales to address students on topical subjects. Its first meeting was held on 19 November with speaker Mr Benson Harries, late President of the South Wales and Monmouthshire Federation on the topic of pharmaceutical reform. A *Pharmaceutical Journal* report stated that he advocated for there to be a pharmacy department in every university and "emphasised the value of good preliminary and technical education to the pharmaceutical student, pointing out the value of a course of instruction in an institution, such as the Welsh College of Pharmacy, where views could be broadened through contact with students of other departments of the Technical College." In November, the guest was Mr Leo Joseph JP who spoke on “Current Pharmaceutical Topics.” The Society continued with invited speakers until its meeting in March 1921 when the students carried out their own debate on the motion “That the outlook for the future of pharmacy is very hopeful and promising.” Reported amendments to the motion provide an insight into the students’ views of the profession including issues such as unemployment, remuneration, bacteriology and the separation of dispensing and prescribing.

The first sports report relating to the School appeared in November 1920 with the news that Cardiff had won a football match 4-2 against Swansea, played at home on 27 November. At the School’s inaugural meeting in November 1923, Professor Greenish, Dean of the PSGB School of Pharmacy, advised the Cardiff students to “take part in sports for a relaxation; if they could not all play football, they could all go on “a nice wet ground with an icey [sic] wind blowing, and shout.” In 1926, athletics joined football in the School’s sporting activities with a report of the recently-formed Cardiff Junior Pharmacy Athletic Club holding a dance at the Whitehall Rooms, with an impressive attendance of nearly 150.

The St David’s Day rag activities were coordinated in 1923 by Mr Lewis, Head of Department, who was praised for his ability to stop the rain “for the first time in weeks while the rag procession was in the streets.” In addition to the parade which raised money for King Edward VII Hospital, the events included a fancy dress ball and a performance of Empire of the Round in 50, a stage musical inspired by Around the World in 80 Days first performed at the London Hippodrome the year before. *The Chemist and Druggist* report stated that “the students of the Pharmacy Department were, as usual, to the fore in the celebrations...”

The exact date of the first meeting of a pharmacy students’ society seems lost in the mists of time. In 1924, Head of School Mr Lewis presided over the organising committee for the Pharmacy Students’ Society dance: “a large company spending a thoroughly enjoyable evening.” In July 1925 Brinley Evans, a pharmacy student, was elected as Student Union President for the Technical College: “Mr Brinley Evans, who is an indefatigable worker in the interests of his fellow students is general manager of the College Magazine and Vice-Chairman of the Pharmacy Students’ Society. Students of pharmacy at the Technical College are proud of the fact that one of their number has been elected to the chair of the Union.” It is not until 1930 when Malcolm Davies designed a crest for the newly-formed Welsh Pharmaceutical Students’ Association, that WPSA, as it has been known ever since, is first mentioned.



John Malcolm Davies’s 1930 design for the WPSA crest is full of symbolism. The demi-dragon symbolises Wales, the pestle and mortar symbolise Pharmaceutics, the fruiting branch of Strychnos nux vomica Pharmacognosy, the zodiac sign for the balance represents Physical Sciences and the retort symbolises Chemistry. The motto is taken from Horace and translates as “The health of the people is the supreme law.” (Mike Hall)

Cardiff students also began to attend local branch meetings, no doubt encouraged by the close links between the local association and the School. The March 1930 Cardiff Branch meeting was addressed by John Keall, a member of the PSGB Council, and it was reported that there was “a record attendance, a feature being the large number of students present.” It is not clear what exactly caught the students’ attention on this occasion. However, WPSA seemed to forge a link with the Branch for future meetings, including a joint meeting in March 1932 between the Cardiff Pharmacists’ Association, the local PSGB Branch and WPSA to hear a talk on X-Rays by Mr W. Deacon, a member of the PSGB Council. In January 1933, R. Vernon Lloyd, Head of School, drew an audience of medical practitioners, students and pharmacists to his talk at the Branch meeting on “A Survey of the New B.P. [British Pharmacopoeia].” Was the report in the *Pharmaceutical Journal* damning him with faint praise with its conclusion that “Mr Lloyd dealt with the subject in an exhaustive manner”? A large number of students also attended the Branch meeting in October 1933 when F. W. Adams (later to become PSGB Secretary and Registrar) gave a lantern slide lecture on the Pharmaceutical Society.

The students also invited outside speakers into the School. In February 1930, the Pharmacy Society of the Technical College hosted a talk by Mr D. J. Roberts of the Welsh Board of Health on “The Inspection and Supervision of Foods”. In January 1933, WPSA invited previous staff member, Mr F. J. Dyer now at the PSGB Biological Laboratory to give a lecture on “Some Biological Aspects of the British Pharmacopoeia, 1932”. It was reported that the five sections to the lecture covered an historical survey of biological therapeutics, important biological and biochemical changes in the BP, glucosidal drugs, hormones, vitamins and their standardisation, thinking in units, and points concerning commoner drugs and preparations. In February 1933, WPSA held a joint meeting with the local section of the Chemical Society when a Mr Ward, research chemist from the Powell Duffryn works, gave a lecture on “Coal as the Raw Material in the Manufacture of Pharmaceutical Chemicals.”

Peter Lindley, who achieved his BPharm (Wales) at the School in 1940 remembered playing for a “useful” rugby team through all three years of his studies in the late 1930s. The team was made up of Pharmacy, Architecture, Commerce and Engineering students, and usually played at Blackweir, although they once played on Cardiff Arms Park. He also joined the Cardiff Rowing Club, representing the city at regattas including Nottingham, Gloucester and Worcester.

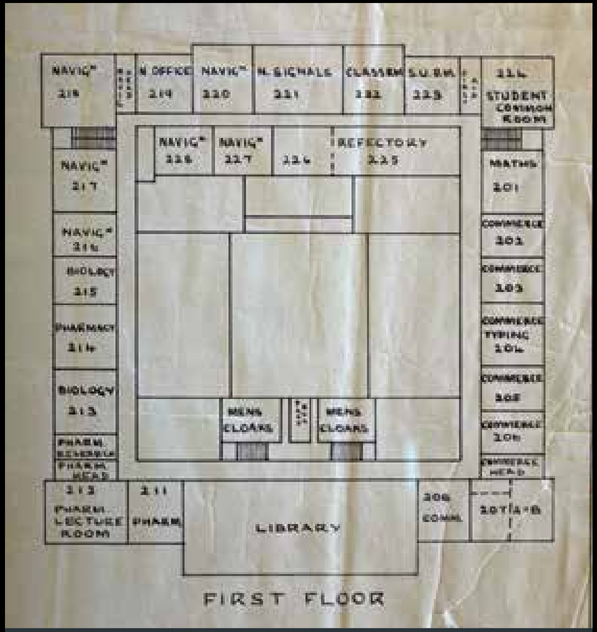
> Mr F. W. Gamble of Allen and Hanburys **“impressed upon the students that there was a place in Cardiff for them to fill, and it is for them to do their best to repay the authorities of that City by the renown they will bring to it.”** February 1928.

His studies were financed by a student loan of £20 per year, which he had to pay back after returning from five years of active service in World War Two. He recorded that financially, times were hard: he had to work through all of his vacations as an unqualified pharmacy assistant, post office sorter, labourer and waiter, and thought himself lucky if he had 5 pence to spend on beer.

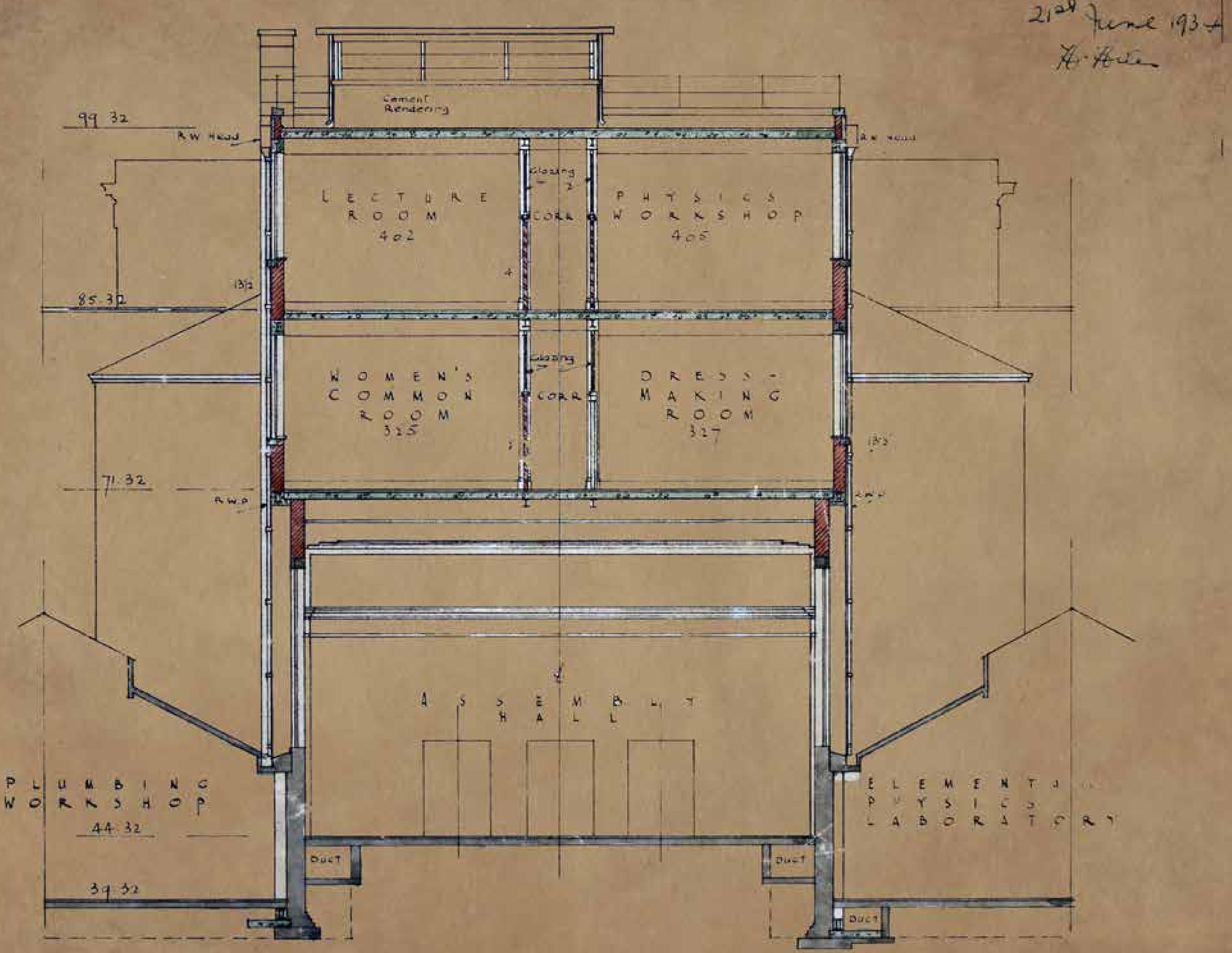
An Old Students' Association was proposed in October 1921 with the announcement in the *Pharmaceutical Journal* that they would be holding their first annual dinner on Wednesday 16 November at the Dorothy Cafe, High Street, Cardiff. Alumni were encouraged to join the association for an annual subscription of half-a-crown: "Come all who can! Old students are urged to take this opportunity of meeting old friends, and making the dinner a huge success." A report in the following month's *Pharmaceutical Journal* confirmed the dinner's success: "The menu was excellent and the courses daintily served; wit was plentiful and to the point, so long before coffee was reached a very genial spirit pervaded the whole party." Technical College Principal Charles Coles also attended, and "urged the members to do their part in raising the professional status of pharmacy, which was kept down by the short-sighted trading policy of so many pharmacists." The evening ended with a "free and easy time of tale-telling and display of wit" and the singing of *Auld Lang Syne*. Perhaps more importantly, they elected their first committee and decided on their next event, an annual picnic in June. At the following year's annual dinner, again reported in the *Journal*, musical entertainment formed part of the proceedings including a performance by Principal Coles, and in 1923, the annual meeting at Cox's Cafe included the "Pharmacy Choir."

A decade later, there were enough past students beyond Cardiff for Mr Wesley German to propose organising a reunion dinner for alumni living in London at the Boulogne Restaurant on Gerrard Street on 22 March 1934, now the heart of London's Chinatown. Nearly 50 people attended including R. Vernon Lloyd, J. Malcolm Davies and Loveday Jones from Cardiff. A telegram of good wishes was sent by WPSA. It was decided to make it an annual event, and an organising committee was formed. A note in *The Chemist and Druggist* in May 1938 recorded that a Mr W. Griffiths, who qualified in Cardiff in 1922, had become President of the Thames Valley District Pharmacists' Association. Clearly the School's reach was growing.

The School also started to look outwards towards its local pharmacy community. In 1933 the first of a series of "refresher" lectures were announced that would be delivered to local pharmacists by R. Vernon Lloyd at the Technical College. The initial session would explain modern methods of sterilisation and making ampoules, including demonstrations. Three more lectures were planned on vaccines and serums, modern *materia medica*, and modern methods of pharmacy and dispensing. This very early example of Continued Professional Development shows the integration of the school within the profession, and the links that R. Vernon Lloyd was keen to build on.



The Technical College's first floor plan drawn in 1934 shows the Pharmacy rooms in its south-east corner. (Glamorgan Archives)



In 1934, the Technical College planned an extension to expand its facilities. (Glamorgan Archives)

An incredible survival now held at Glamorgan Archives sheds extremely detailed light on exactly what the facilities and equipment were at the School of Pharmacy (and indeed the whole Technical College) in March 1937. An inventory exists listing every piece of furniture, laboratory equipment and office fitting in the building, alongside its estimated financial value. Presumably, as a Council-run department, it was completed as part of an audit procedure. Certain details have later amendments and updates, until 1944.

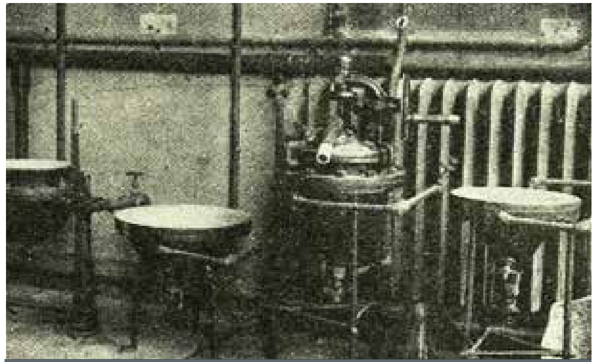
From this extensive document, we know that the Pharmaceutical Laboratory contained electrically-heated autoclaves, an oven, extraction baths and a steriliser. The equipment also numbered 12 retort stands, 10 wooden burette stands, 20 sieves, 144 shoprounds with recessed labels and square stoppers, and nine druggist scales. It's clear from the paperwork that the person carrying out the inventory was not a pharmacist: one of the lines reads "16 glass 'mortices' and pestles." Some of the equipment is definitely of a previous age: a "Lovibond Tintometer with light attachment"; 16 lozenge boards and rollers; and opacity tubes for the standardisation of bacterial vaccines. Other items are still bread and butter, such as 18 conical flasks, 28 beaker flasks and 12 bunsen burners.

The Pharmacy Research Laboratory Room contained more heavy-duty equipment including a "shaker machine complete with motor on base", a centrifuge, a homogeniser, an ultra-viascope, a polarimeter, a colorimeter and a thermostatic heating outfit. A thermoionic valve relay, Beckmann's depression of freezing point apparatus, and a hydrogen ion apparatus indicate more technical processes.

The Biology Lecture and Lab Rooms contained an impressive array of 36 microscopes, alongside dissecting boards, a rocking microtome for preparing specimens for mounting on slides, jars, tiles, tanks, slides, lamps, and enamel jugs, bowls and dishes. There was also a range of teaching tools, including botanical and zoological charts, skeletons, prepared microscope slides, and, added in 1942, a "Mapograph unit" which was a set of world map outlines mounted onto rollers that could be used to produce unlimited copies on paper.

The Pharmacognosy Laboratory was fairly sparsely equipped. Alongside bottles, bowls and basic lab equipment, there was one binocular microscope, one mechanical stage microscope, and 18 Baker microscopes, presumably reflecting smaller teaching groups. The inventory notes that four of the microscopes were stolen in 1939 and 1940. A garden spade on the pharmacognosy listing indicates the basic nature of specimen collection. However, a "London microscope No 29 (B) with focussing sub stage, eye piece and two object glasses", plus an Abbe condenser were bought in 1940/41 to enhance the available facilities.

Tantalisingly, the listing for the Pharmacy Museum and Library gives no indication of its exact contents. Specimen jars, anatomical models and textbooks are listed, but no titles or descriptions are given. In contrast, the listing for the Pharmacy Manufacturing Laboratory and its adjoining storeroom are extremely detailed, down to a hammer, 21 sieves and a "root cutter without base." They give a very good insight into the processes and dosage forms of the day: copper steam jacketed tilting pans were used to concentrate large quantities of liquids and extracts through evaporation; tincture presses allowed for the alcoholic extraction of plant alkaloids; 16 pill machines and cutters were available for students to learn the necessary manual skills individually; hand-driven "Eureka" and "Premier" tablet machines would have enabled students to understand the principles of compressing medicinal powders; a whole host of percolators, an elutriator to separate particles using gas or liquid, Buchner funnels, and condensers show that the full gamut of processes was being taught.

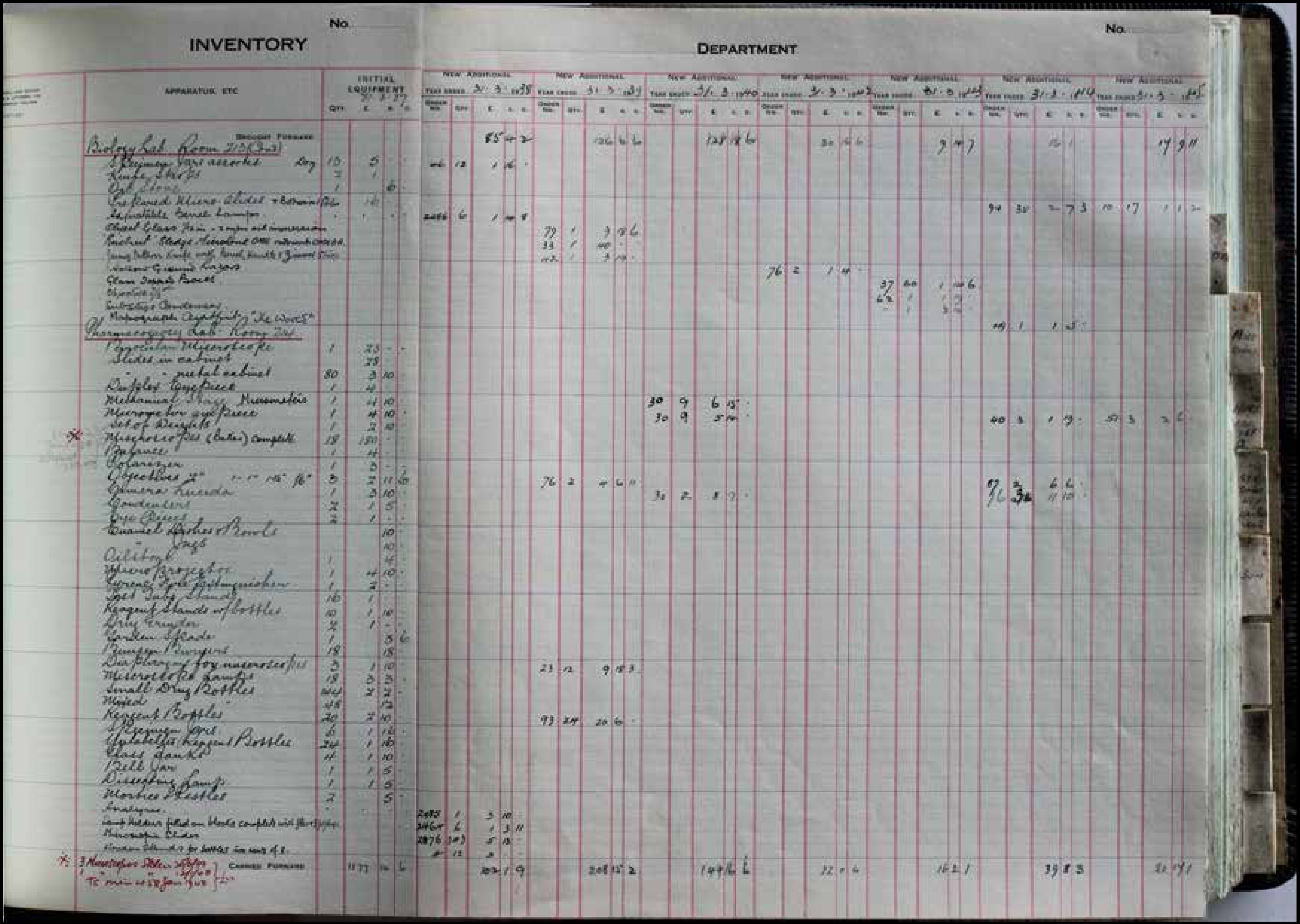


A piece on machinery in pharmacy schools appeared in The Chemist and Druggist on 29 February 1936, including this grainy image of steam jacketed pans from Cardiff. (Chemist + Druggist)

The final teaching room listed was the Pharmacy Dispensing Room, intended to provide students with the opportunity to learn the skills needed within a retail pharmacy setting. The equipment includes 600 glass stoppered shopround bottles, 43 Winchester bottles with sand-blasted labels and 75 poison bottles, alongside plaster irons, pill silverers, label dampers and ointment and pill boxes. They remind us that pharmacy in this period was still part of a long tradition of making and presenting medicines to a customer that, before the National Health Service, needed to be impressed with pharmaceutical expertise that included presentation and packaging.

The inventory concludes with an audit of the Head of Department's office. He appears to have the only electric radiator in the department. Other "luxuries" include two steel filing cabinets, an arm chair, and even the "W.P." (waste paper) basket and letter basket are listed.

The listing for the Pharmacognosy Lab from the 1937 inventory. (Glamorgan Archives)

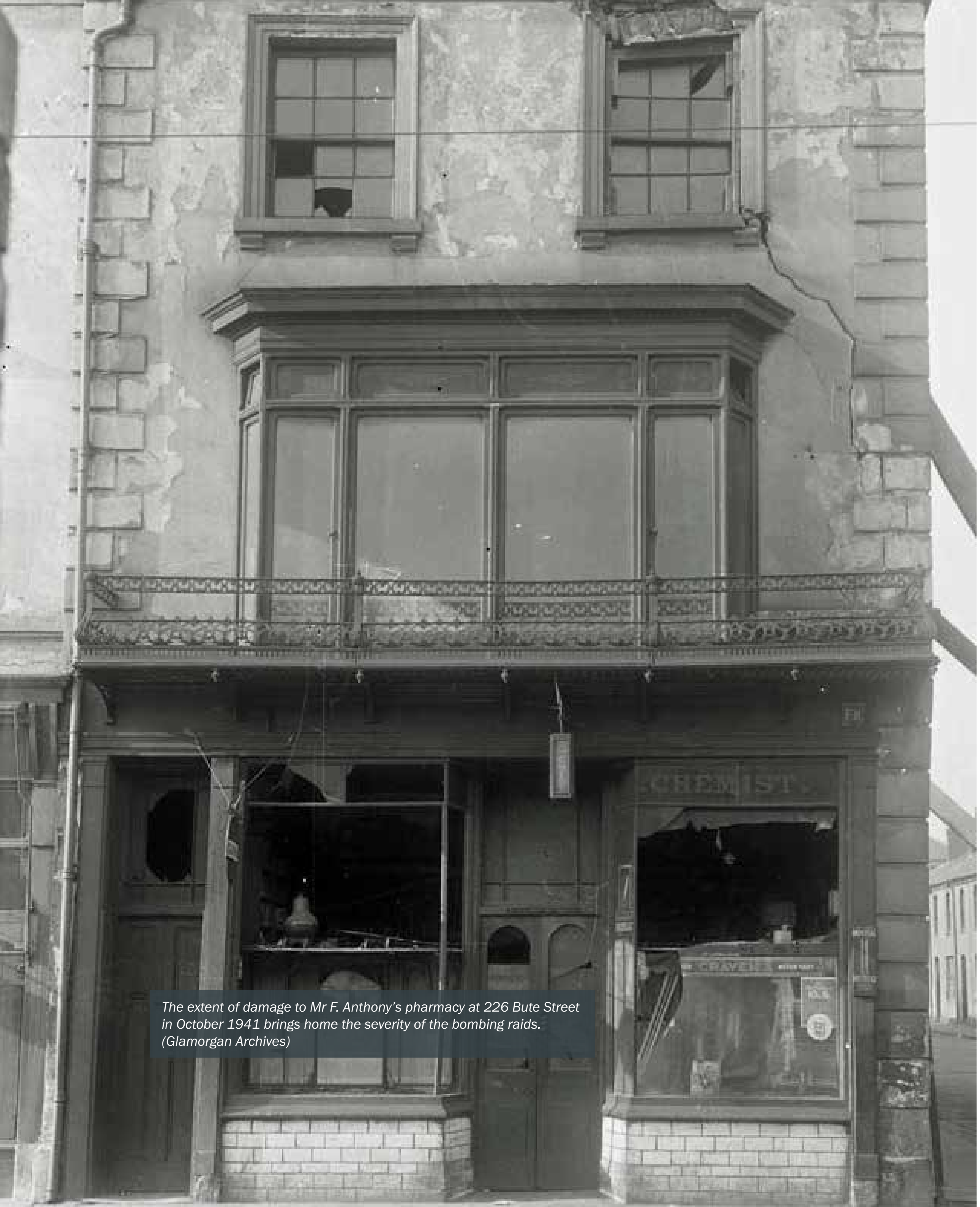


CHAPTER **THREE**

3

“Pharmaceutical education must make another substantial advance...”

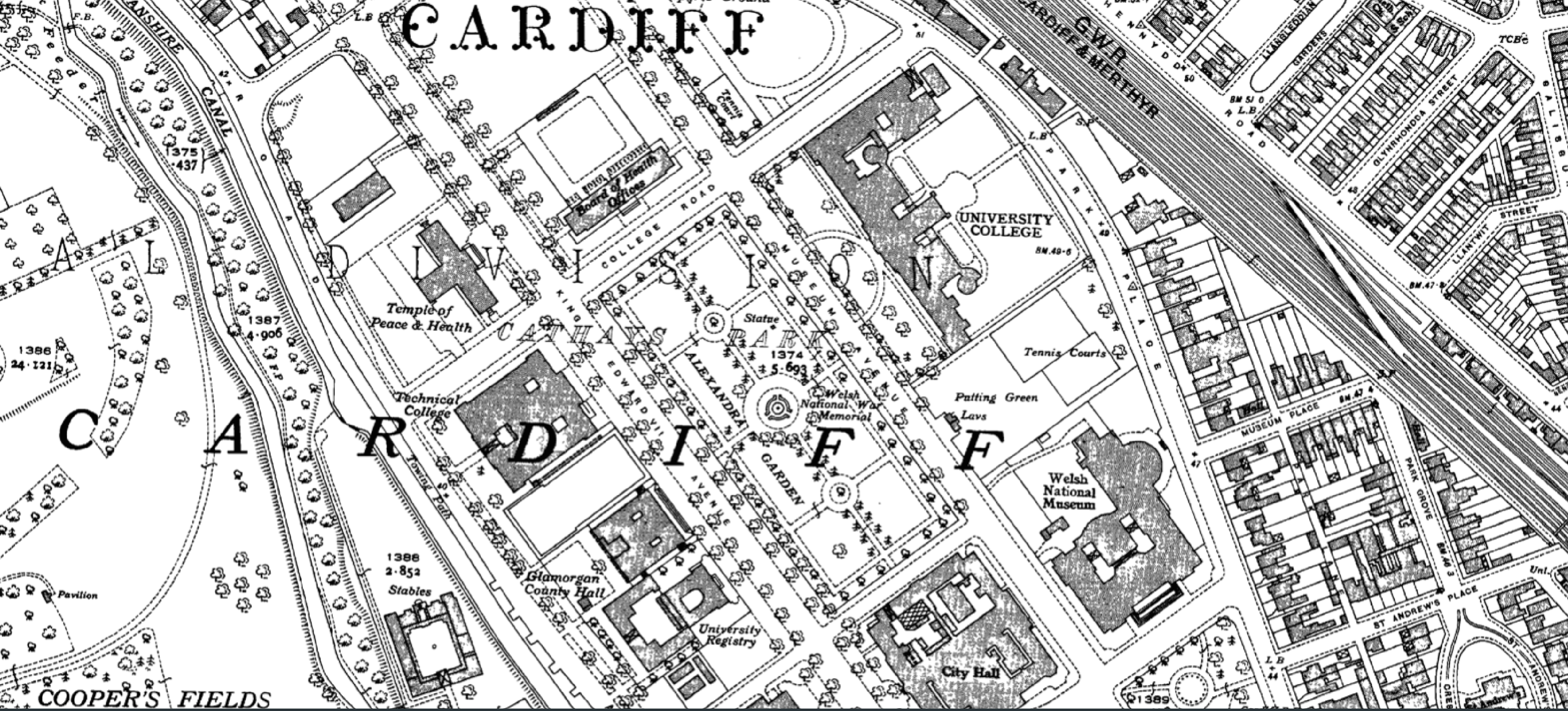
1939-1959


The extent of damage to Mr F. Anthony's pharmacy at 226 Bute Street in October 1941 brings home the severity of the bombing raids. (Glamorgan Archives)

Wartime Cardiff

When the Second World War broke out in September 1939, Cardiff was at significant risk from enemy action. As the largest coal-exporting port in Great Britain, its massive docks were a target for the German airforce focussed on disabling Britain's industrial capabilities. The first German air raid took place on Cardiff on 3 July 1940, made possible by the fact that Germany had taken control of France and so could launch attacks from French airfields, putting south Wales in range. Subsequent attacks took place on 10 and 17 July 1940, and again on 7 August. In 1941, there were dozens of raids between January and May. The worst was 2 January 1941 when over 100 German planes dropped bombs that destroyed more than 350 homes, and badly damaged Llandaff Cathedral. 165 people were killed that night, 116 from the Canton and Riverside areas, including 50 people from De Burgh Street in Riverside. Although there were fewer raids in the following years, the onslaught continued with the final attack on 17 May 1944 when the railway station was hit. In total, more than 2,100 bombs fell on Cardiff causing 355 deaths and more than 500 injuries.

Activities at the Technical College and the University during the Second World War were severely reduced, although still continued. Technical College prospectuses in this period contained a note inside the cover: "Students are admitted only upon the understanding that they will take their share of fire-prevention duties at the Technical College unless they are able to produce a satisfactory reason why they should be excused." A section headed Air Raid Precautions outlined the pattern of the corridor bells relating to imminent danger and the "raiders passed" signal, all conveyed by the watcher on the College roof. An exam procedure was also outlined that covered evacuation of the hall if a warning was heard, the safe-keeping of papers in the interim, and the possibility that, if the alarm was of "short duration", the exam could be continued with additional time allowed for the period when the candidates were in the air raid shelter. The reality of holding exams in a city subject to bombing was made very clear in January 1941 when an air raid in Cardiff happened during the week of the Pharmaceutical Society's exams. Luckily there was no injury to examiners or candidates, but the *Pharmaceutical Journal* reported that "some adjustment in the form of the examination proved to be necessary." At the height of raid, the PSGB President and nine examiners sheltered in a basement, while an incendiary bomb penetrated the roof



Cathays Park in 1941 is recognisable to us today, with the Technical College (now the Bute Building) housing the School of Pharmacy and University College (now the Main Building) on the opposite side of Alexandra Gardens. (www.old-maps.co.uk and Ordnance Survey)

of the building in which they were taking cover. On 26 February 1941, bombs fell on the University Students' Union Building (now the Student Support Centre at 50 Park Place) causing significant damage. The University gymnasium and the tennis courts were also hit. Many of the windows in the Main Building were destroyed, and shrapnel left damage in the stone around the Park Place entrance to the Main Building which is still visible today. Stephen Whitehouse, a student firewatcher, died from wounds received during the raid. On 3 March 1941, two bombs fell on Main Building causing a major fire in the Library, and damage to the Physics department. Students were amongst the volunteers that managed to get the fire under control.

One of the major wartime developments for the University as a whole, and the Pharmacy School within the Technical College, was the arrival of evacuee departments from the University of London. On 16 September 1939, *The Chemist and Druggist* reported that the Pharmaceutical Society's School (known as "the Square") was in the course of transfer to Cardiff "in accordance with the University of London's scheme." The University moved all of its colleges following a plan formulated a year earlier in conjunction with Vice-Chancellors from across the country in response to Hitler's aggression towards Czechoslovakia, and the subsequent Munich crisis. Vernon Lloyd, head of the Cardiff School was an alumnus of the London School and understood how the staff and students were feeling: "the College has been forced to tear up its roots in Bloomsbury and transplant them in the far distant City of Cardiff…the College equipment is not the only thing that had been brought from London. The members of the [London Students'] Association present must be congratulated on their successful transport of a very large quantity of the Square Spirit…"

Three vans, usually used for transporting racehorses, filled with 12 tons of equipment arrived in Cardiff from London on Friday 8 September 1939. In Cardiff, Harry Berry, the London School's Dean was allotted a room belonging to the Professor of Music, which still contained a grand piano. Pharmaceutics and Pharmaceutical Chemistry were taught at University College, Pharmacology at the Medical School and Physiology at the medical unit of Cardiff Royal Infirmary. The Pharmacognosy department was housed in large wooden huts at the Cardiff University Botany department. The London Pharmacy School also built its own labs, one Dispensary and one practical lab for Galenical Pharmacy and Bacteriology. There was initially a difficulty finding accommodation for the Chemistry Department, as University College had lost half its lab space to Government departments, but the London and Cardiff students ended up sharing a lab, with seven London pharmacy research students finding room at the Technical College's Chemistry Department. Being spread across so many parts of the Cardiff campus made for complicated timetables for the evacuees. However, the London students did not seem to mind: "Some little time is wasted in many journeys to and from, through a very delightful park."

"The Square" was based in the Welsh capital for just about three years. Their neighbours were the Ministry of Supply (Chemical Inspection) on one side and King's College of Household and Domestic Science on the other, both institutions also evacuated from their London bases. The expertise of the staff was also appreciated in their temporary homes. Professor Berry, for example, was appointed Pharmaceutical Adviser to the Welsh Board of Health for South Wales. However, with a sad irony, the evacuated students were not safe in Cardiff. K. M. N. MacClaren ("Mac"), Social Secretary of the London pharmacy students' association was tragically killed during an air raid in February 1941.

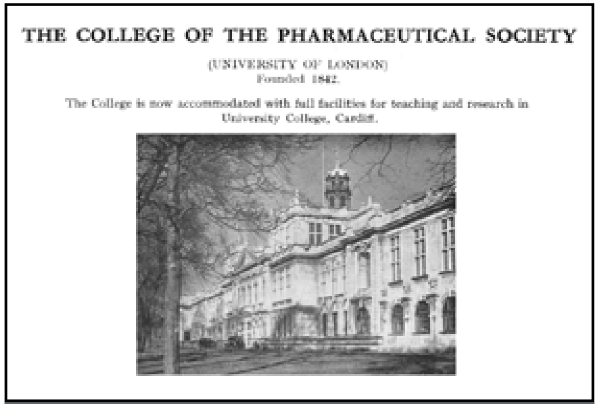
Although the Cardiff School's teaching remained largely independent of that of the London evacuees, sometimes the students came together. For some individual students, this was in an academic sense: Desmond Lewis, who became PSGB Secretary in 1967, studied the Preliminary Scientific Exam in the Welsh School, then "crossed the road" to the exiled PSGB School to continue his studies. *The Chemist and Druggist* on 18 November 1939 includes a report of the "Evacuated and Local Students' Combined Meeting: At the first combined meeting recently of members of the Welsh Pharmaceutical Students' Association, and students of the School of Pharmacy of the Pharmaceutical Society studying at the Welsh College of Pharmacy, Cardiff, the former acted as the hosts at tea. Afterwards Dr W. H. Linnell (of the Society's School) gave an address on "Chemotherapy.""

The London pharmacy students also looked to their local hosts to help arrange sporting fixtures, admitting that the standard of sport in the University teams was too high for them, and there were also not enough students to field full soccer and rugby teams on the same Saturday. The London Rambling Club continued, although an article in their student magazine confessed that "occasional difficulties were encountered because members of the Club did not know where they were going or how to pronounce the name when they arrived." The Rambling Club also decided not to continue with their traditional midnight ramble in case they were mistaken for parachutists.

Christmas parties were also a combined event with Cardiff and London students inviting students from the Welsh College of Domestic Arts to increase the number of women. The WPSA annual dance in 1940 hosted over 260 guests including R. Vernon Lloyd and Harry Berry. The London student magazine commented that "Social activity during the Autumn Term has been maintained, despite the interruptions of the siren."

With the PSGB School based in Cardiff, it became a centre for pharmacy education nationally. From January 1940, the Pharmaceutical Chemist Qualifying Examination was arranged to be held in Cardiff. In 1941, the practical component of the Society's exams was available at Brighton, Cardiff, Nottingham and Manchester, rather than the usual locations of London and Edinburgh.

In October 1942, it was announced in *The Chemist and Druggist* that there were plans for a series of training sessions for overseas pharmacists in dispensing drugs, medicines and poisons, and the law relating to them to be held at Cardiff and Chelsea. Interested people should apply to the Dean of the PSGB School of Pharmacy based in Cardiff, or Head of the Chelsea School. However, these ambitions were thwarted for Cardiff due to a small number of applications. We have no record of the number of overseas pharmacists working in the Cardiff area during the War. In 1943, the PSGB Education Committee responded to a letter from the Association of Pharmaceutical Employees identifying the need for post-war education and refresher courses, by suggesting that Cardiff Technical College could be the location for such courses and exams.



THE COLLEGE OF THE PHARMACEUTICAL SOCIETY

(UNIVERSITY OF LONDON)
Founded 1842.

The College is now accommodated with full facilities for teaching and research in
University College, Cardiff.

UCL School of Pharmacy Library

The decision to return to London was finally made in 1944. Harry Berry expressed his gratitude to their Welsh hosts: "It was the good fortune of the School to be offered the hospitality of the University of Wales, at Cardiff. While in Cardiff we met perfect hospitality, generous and unselfish from our hosts, from the Welsh College of Pharmacy, and from citizens in every walk of life." The view from the students, published in their student magazine, presented a mixed blessing: "Although all of us are very comfortable in Cardiff, none of us will be sorry to return to Bloomsbury Square, where we may have difficulty in settling down again after the vastness of University College, the magnificent Civic Centre, and the chiming of the city clock to which we are gradually growing accustomed."

This group of evacuated London students in front of Main Building in June 1941 includes Dan Douglas Davies. His granddaughter Jaimie Rees also went on to study pharmacy in Cardiff. (Nichola Rees)

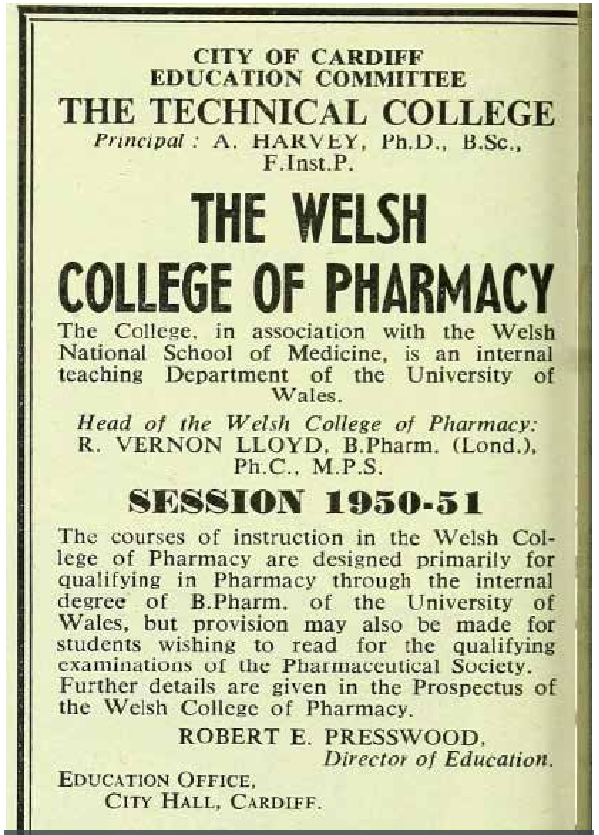
“We must move forward in education”: the courses

Unsurprisingly, the war had had a significant impact on pharmacy. Pharmacists and pharmacy students had been a reserved occupation, exempt from military service, but they had served an important function on the Home Front. As Vernon Lloyd put it, “In peace time the man in the street has always looked upon the chemist in his shop as a friend in need. In war time, this relationship can become a very valuable aid in preserving the morale of the general public.” The shortages that the war had produced also affected pharmacy supplies. The *National War Formulary* and amendments to the *British Pharmaceutical Codex* specified substitutes to be used in case of shortages. Wartime rationing did not fully end until 1954, and the austerity that such a long period of conflict inevitably produced had both physical and psychological impact for many years to come.

However, as is well documented, the impact of the war on drug development was nothing short of revolutionary. Sulphonamides, penicillin and the use of steroids were just some of the new drug areas, and microbiology was now essential training for a pharmacist because of the new work with parenteral technology, antimicrobial agents and aseptic techniques. The most famous story is that of penicillin, with the war providing Howard Florey’s existing team in Oxford with increased urgency to produce effective antibacterials. Mass production of penicillin in America allowed supplies in sufficient quantities in time for the D-Day landings in 1944. After the war, the search for other antibacterial drugs launched “the antibiotic era.” Another key wartime development was in the field of antimalarials. It had been anticipated that German supplies of existing drugs, such as mepacrine, would be interrupted, and so projects to produce alternatives began in the early war years. The successes were proguanil for ICI in 1945 and chloroquine for Winthrop in 1946. Cyril Maplethorpe, Chairman of the PSGB Education Committee, identified the consequences of these developments for pharmacy: “if the pharmacist of to-day [sic] hopes to take his proper place in the new health service his pharmacy must be so equipped that he can handle any of the specialised products [penicillin] which are being called for by the medical practitioner.”

When Hugh Linstead, PSGB Secretary & Registrar, addressed the Cardiff Branch in September 1944, he was already looking forward to a major milestone in British healthcare, the proposed National Health Service (NHS). His summary of the points which pharmacists should focus on were prescient: promoting closer international links, actively increasing pharmacy research, and that “pharmaceutical education must make another substantial advance…” Consideration of the pharmacist’s place within the healthcare team, particularly in the NHS from 1948 was key. Professor Heathcote, head of the Department of Materia Medica and Pharmacology at the Welsh School of Medicine, speaking at the annual dinner of the South Wales branch of the Guild of Public Pharmacists in April 1950 expressed his hopes for a pharmacological institute as part of a proposed new hospital and medical school at Cardiff: ‘in addition to providing opportunities for the training of experts in drugs, a pharmacological institute would enable medical, pharmaceutical and dental students to come into contact with each other to the benefit of each.”

> **“What is the future to be – are we merely to be vendors of packed products, ethical or otherwise, or are we to be highly skilled professional people who, with doctors, dentists and others fit into a fully co-ordinated health service? Much depends on us – we must move forward in education.”**
> C. W. Maplethorpe, February 1946



CITY OF CARDIFF
EDUCATION COMMITTEE
THE TECHNICAL COLLEGE
Principal : A. HARVEY, Ph.D., B.Sc., F.Inst.P.

THE WELSH
COLLEGE OF PHARMACY

The College, in association with the Welsh National School of Medicine, is an internal teaching Department of the University of Wales.

Head of the Welsh College of Pharmacy:
R. VERNON LLOYD, B.Pharm. (Lond.), Ph.C., M.P.S.

SESSION 1950-51

The courses of instruction in the Welsh College of Pharmacy are designed primarily for qualifying in Pharmacy through the internal degree of B.Pharm. of the University of Wales, but provision may also be made for students wishing to read for the qualifying examinations of the Pharmaceutical Society. Further details are given in the Prospectus of the Welsh College of Pharmacy.

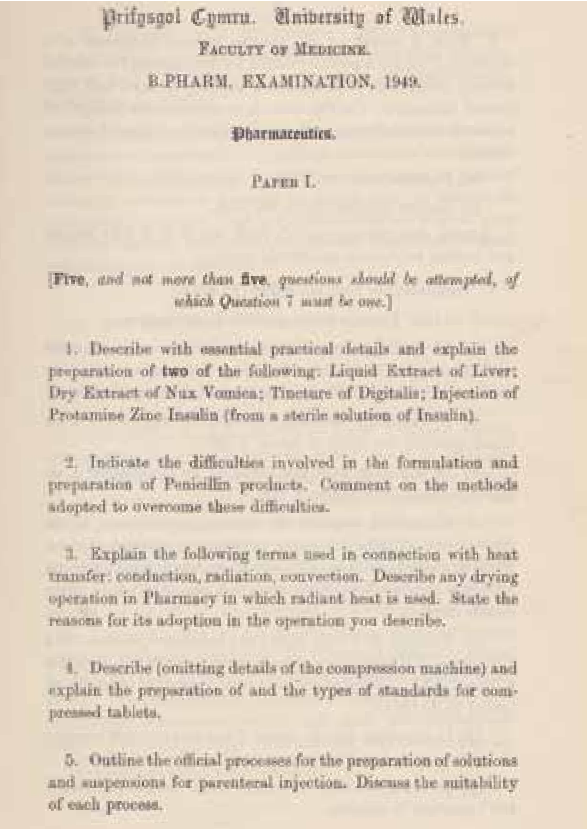
ROBERT E. PRESSWOOD,
Director of Education.
EDUCATION OFFICE,
CITY HALL, CARDIFF.

The Chemist and Druggist, *12 August 1950. (Chemist + Druggist)*

The Pharmaceutical Society’s post-war education policy was primarily based on the findings of a Committee of Enquiry set up after the 1933 Pharmacy and Poisons Act. A major development was that the Qualifying Exam was phased out with the aspiration that pharmacy should be an all-graduate profession. The Pharmacy Act of 1953 abolished the Chemist & Druggist register, and all existing Chemists & Druggists were transferred to the Pharmaceutical Chemists’ register as Members of the Pharmaceutical Society (MPS). Those who were already Pharmaceutical Chemists were now designated Fellows of the Pharmaceutical Society (FPS), and a new Honorary Fellowship category was inaugurated to recognise exceptional service to the profession. In fact, the 1953 Act was a Transitional Act, and was replaced by the 1954 Pharmacy Act which repealed it, plus the 1852, 1868 and 1908 Pharmacy Acts. The old Victorian and Edwardian membership and educational order was finally swept away.

Until all of these changes worked through the system however, the reality through the 1940s and 1950s was that pharmacy qualifications remained a mixed economy. The School continued to run evening classes in Chemistry, Physics and Biology, and part-time day courses in Biology, Chemistry, Pharmaceutical Chemistry and Dispensing during the 1940s and 1950s, alongside short-lived courses in The Action of Drugs for optics students and Biology, Anatomy and Physiology for training nurses. The Apothecaries' Hall dispensers' course was discontinued in 1959. Cardiff was also one of only three schools of pharmacy to offer an internal degree, alongside London and Manchester. It also continued to offer the external London degree alongside the BPharm (Wales) until 1949. By 1946, the BPharm (Wales) degree had been awarded to 49 candidates since its inception in 1936. Numbers started to pick up after the War, with 15 graduates in 1945 and a varying number in the following decades to 1959. Eight passes in the BPharm in 1948 and 1950 is in marked contrast to 23 passes in 1955 and 32 passes in 1957. The proportion of women graduates is also noteworthy with more than 50 per cent in 1959 (12 women out of 23 total), and close to 50 per cent for the rest of the decade. From 1951, the Welsh School's adverts explained that "The courses of instruction in the Welsh College of Pharmacy are designed primarily for qualifying in Pharmacy through the internal degree of BPharm of the University of Wales, but provision may also be made for students wishing to read for the qualifying examinations of the Pharmaceutical Society." The School's annual intake was typically 8 Pharmaceutical Chemist students and 24 BPharm students in the later part of the 1950s, charging tuition fees of £30 for the diploma course and £35 for the degree course per session.

A surviving letter from Head of School, R. Vernon Lloyd, headed "Welsh College of Pharmacy, Session 1951-52", gives an insight into the academic requirements for students in this era. The letter outlines the books that are required reading: for Chemistry, J. R. Partington's *A College Course of Inorganic Chemistry* (a book published in 1939, by the Professor of Chemistry at Queen Mary's College); T. M. Lowry and A. C. Cavell *Intermediate Chemistry*; F. Sherwood Taylor *Inorganic and Theoretical Chemistry* (first published in 1936); or G .P. McHugh *A Practical Chemistry for Higher School Certificate and Intermediate Students* (first published in 1934). For Physics, C. G. Knott's *Mathematical Tables* was recommended, alongside Crowther's *Manual of Physics*, first published in 1923. Rather enigmatically, the recommendation for Biology was to discuss suitable books with lecturers. Students were also reminded that they must register with the PSGB before starting studies at the College. Students were also required to buy College notebooks, available from the College Stationers, with the number required provided on their day of entry.



Prifysgol Cymru. University of Wales.

FACULTY OF MEDICINE.

B.PHARM. EXAMINATION, 1949.

Pharmaceutics.

PAPER I.

[**Five**, *and not more than* **five**, *questions should be attempted, of which Question 7 must be one.*]

1. Describe with essential practical details and explain the preparation of **two** of the following: Liquid Extract of Liver; Dry Extract of Nux Vomica; Tincture of Digitalis; Injection of Protamine Zinc Insulin (from a sterile solution of Insulin).

2. Indicate the difficulties involved in the formulation and preparation of Penicillin products. Comment on the methods adopted to overcome these difficulties.

3. Explain the following terms used in connection with heat transfer: conduction, radiation, convection. Describe any drying operation in Pharmacy in which radiant heat is used. State the reasons for its adoption in the operation you describe.

4. Describe (omitting details of the compression machine) and explain the preparation of and the types of standards for compressed tablets.

5. Outline the official processes for the preparation of solutions and suspensions for parenteral injection. Discuss the suitability of each process.

This 1949 Pharmaceutics paper also included a compulsory French or German translation of a pharmaceutical passage.

Marion Rawlings
1925 - 2013

Chemist + Druggist

Marion Rawlings qualified in 1952, having passed the BPharm (Wales) in two years, and studied for the Associateship of the Royal Institute of Chemistry in her third year. She recalled "whistles and cat-calls" when she entered the lecture theatre as the only woman in that final year course. She then took up analyst jobs, first for Monsanto Chemicals in north Wales and then for Glaxo in London. She returned to her native Wales with her new husband and worked as a locum before buying her own business in 1957 which she ran until her retirement in 1990.

She was the first woman to serve on the Pharmaceutical Services Negotiating Committee from 1978 to 1982, and the first woman to be a member of the PSGB Welsh Executive. She joined the board of Unichem in 1975 and served as a non-executive director until 1989. She also served as secretary and vice-chair of her Local Pharmaceutical Committee, and was chairman and secretary of the National Pharmaceutical Union (now NPA) Cardiff Branch. She was a founder member of the Cardiff branch of the National Association of Women Pharmacists. She was first elected to the PSGB Council in 1983, and became PSGB President in 1989, with fellow Cardiff alumna Linda Stone as her Vice President. She was awarded the PSGB Charter Gold Medal, its highest award, in 1990, and appointed OBE in the same year.

In 1957, the entrance requirements for the Pharmaceutical Chemist exam were brought into line with universities. Applicants could either sit the PSGB entrance exam, or achieve advanced level GCE Chemistry, Physics and Biology, plus English, Maths and a language other than English at GCE ordinary level. They did not have to take particular approved courses. The aim was that this would allow flexibility for all applicants and would encourage students to stay on in the sixth form.

The practical elements of pharmacy training were also altered. Rather than the established two years pre-academic practical training, or one year post-academic training, from 1958 students only had to do one year's training which could be carried out either before or after the course, although it was assumed that most would do it afterwards. Apprenticeships were discontinued and premises for practical training were no longer approved by the Society, although it retained the power to disallow a premise if it proved unsuitable.

The Pharmaceutical Chemist Diploma course was finally extended from a two to three year course in 1958, having been first proposed by the PSGB Council in 1947. From the situation in the 1940s, when only 10 per cent of pharmacists entered the profession with a degree-standard education, by the end of the 1950s, all pharmacy students had to complete a three year course at degree standard. These changes were intended to enable more time for a broad range of subjects, and for students to assimilate and understand the subjects they were being taught. It also meant that the Qualifying Exam was not concentrated into the end of the course. However, the changes were controversial in the profession as some pharmacists thought the longer course would be a deterrent to candidates and create a manpower problem.

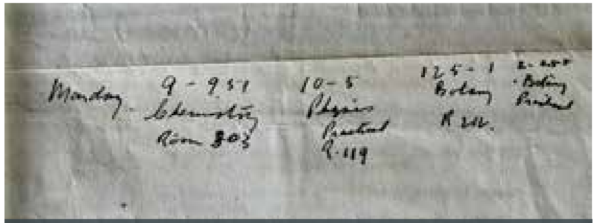
With the length of the Pharmaceutical Chemist course now the same as the degree, students could choose whether to do the diploma or the BPharm. It was considered that most aspiring retail pharmacists would do the diploma, and there was some criticism that the degree level was set too high and would lose potential students to other science subjects. The other criticism was that, having completed the degree, the graduate would remain in research or academia rather than registering as a pharmacist. C. W. Maplethorpe countered these criticisms with a strongly-held belief that retail pharmacists should be equipped with an academic qualification. He argued that they needed to be able to understand new drugs, and to talk to other medical professionals on the same level. Running a business also required high levels of education as well as practical training.

There were a number of letters in The *Pharmaceutical Journal* in this period calling for the course to provide business training, as the multiple pharmacies were already doing for their staff. The PSGB Council argued that the three year course allowed them to include this element.

> **"the pharmacist [should be educated to be] ... accepted as the ultimate professional authority on drugs. He becomes the one professional man who has a complete all-round knowledge of the sources, identification, preparation, standardisation, actions and uses of drugs."**
> C. W. Maplethorpe, 1957

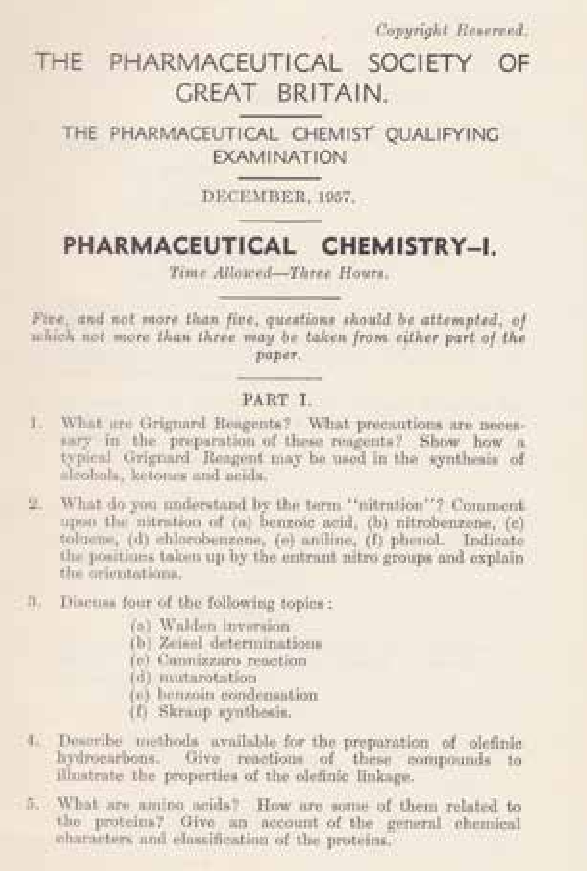
Adjustments to the national syllabuses to try to equip aspiring pharmacists with the skills and knowledge needed for their careers, came in fits and bursts. From 1952, the outgoing Qualifying Exam included a new two year course of Physiology and Pharmacology, subjects that had been taught in Cardiff as part of the BPharm (Wales) syllabus since the 1930s. The School appointed internal examiners for Physiology and Biochemistry for the first time in 1957, presumably reflecting the increase of in-house expertise in these areas.

The role of Pharmacognosy in the pharmacy syllabus was also hotly debated in this period, based on differing beliefs about its relevance to the modern pharmacy profession. Derek Dunlop, acting as the Privy Council Visitor for the PSGB Council in 1947, sympathised with many students' lack of enthusiasm: "While a knowledge of plant anatomy may be of some slight importance for a candidate's future studies in pharmacognosy, a combined broad course in the biology of living things would be of much more fundamental and stimulating educational value than the learning of the details of the morphology of fruits, stems, leaves and dogfish." An initial proposal by the PSGB Education Committee in 1955 was that it should only be allocated 100 hours over two years, a dramatic reduction. However, the change to the three year Pharmaceutical Chemist course in 1958 meant a new proposal of 180 hours for Pharmacognosy in the first two years of the course, and none in the final year. The opposition from many Pharmacognosy lecturers led to the final agreement that each school could set their own Part I paper. Importantly for the subject's continued vibrancy, the syllabus did not rely on memorising drugs, but included chromatography and chemical tests.



Monday 9 - 9.50 Chemistry Room 303
10 - 5 Physics Practical R.119
12.5 - 1 Botany R 2[illegible]
2 - 4.50 Botany Practical

A surviving note on the back of an official letter sent in 1951 shows the Monday timetable with Chemistry, Physics and Practical Botany lectures and a Botany Practical. (Glamorgan Archives)



Copyright Reserved.

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

THE PHARMACEUTICAL CHEMIST QUALIFYING EXAMINATION

DECEMBER, 1957.

PHARMACEUTICAL CHEMISTRY–I.

Time Allowed—Three Hours.

Five, and not more than five, questions should be attempted, of which not more than three may be taken from either part of the paper.

PART I.

1. What are Grignard Reagents? What precautions are necessary in the preparation of these reagents? Show how a typical Grignard Reagent may be used in the synthesis of alcohols, ketones and acids.

2. What do you understand by the term "nitration"? Comment upon the nitration of (a) benzoic acid, (b) nitrobenzene, (c) toluene, (d) chlorobenzene, (e) aniline, (f) phenol. Indicate the positions taken up by the entrant nitro groups and explain the orientations.

3. Discuss four of the following topics:
    (a) Walden inversion
    (b) Zeisel determinations
    (c) Cannizzaro reaction
    (d) mutarotation
    (e) benzoin condensation
    (f) Skraup synthesis.

4. Describe methods available for the preparation of olefinic hydrocarbons. Give reactions of these compounds to illustrate the properties of the olefinic linkage.

5. What are amino acids? How are some of them related to the proteins? Give an account of the general chemical characters and classification of the proteins.

J. Malcolm Davies

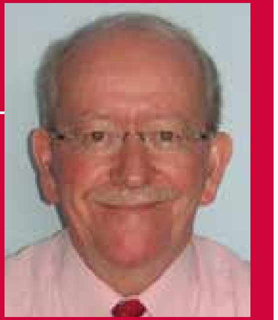
Cardiff pharmacy graduates in the early 1950s, including Ivor H.Harrison (back row, second from left), Bruce A. "Sandy" Sanders (back row, third from left), and Philip John Harcombe (back row, fourth from left). Ivor Harrison went on to join the staff as Lecturer in Pharmacy Law and Pharmaceutics. (Mrs Margaret Skinner)

In Cardiff, Pharmacognosy continued to play a valued part in the course, no doubt due to the expertise of J. Malcolm Davies, now a long-standing member of staff. It was a core subject in the Final Part II exam alongside Physiology and Biochemistry, Pharmaceuticals including Dispensing, Pharmaceutical Chemistry and Pharmacology. Part I remained broader featuring Chemistry (inorganic, organic and physical), Botany (plant histology and mycology), and Bacteriology.

Brian E. Jones, who started his BPharm course at the School in 1958 remembers the practicalities of the timetable: "The degree students only went into the Pharmacy School in the second and third years of the course. In the first year of the degree course, examinations were taken in three subjects: University Part 1 in Chemistry, Botany and Microbiology. The buildings in which these were located were scattered over three sites: Cathays Park and two in the Newport Road. This involved much more time in moving around between lectures and practical classes. A good example was Monday mornings. From 9:00 to 10:00, we had a lecture in the microbiology laboratory in the Royal Infirmary, which was then a fully functional hospital. The lecture was given by a Dr Holman, a very charismatic lecturer, who had some strange ideas, like warning us against having polio vaccination as we would be weakening the human but on the plus side telling us to look in butchers' shops and see if they had cooked and uncooked meats in the same display case and to complain. His lecturing skills impressed us very much because he marched in and started off without any notes. He had a technician to operate a projector with slides in colour. We sat in old-fashioned desks with flat writing surfaces. The lecture was followed by a practical class sitting in another similar set of desks. We examined a range of many items, mainly swabs taken recently from patients so we soon learned to be very careful in disinfecting hands and surfaces. The practical class finished at about 11:45. At 12:00 we had a chemistry lecture together with chemistry, botany and medical students, about 120 people, in the main college building in Cathays Park so we had to walk there as fast as we could, come rain or shine. Invariably we would arrive just after the lecture had started so we were greeted by the time-honoured student practice of stamping on the floors and banging on the desks: a booming noise that you could hear throughout the building. At 1:00 we were ready for a break."

Brian E. Jones

b. 1939



Brian Jones graduated BPharm from the School in 1961 and completed his pre-registration year in Swansea General Hospital. In October 1962, he joined Eli Lilly & Company Ltd, moving to Crookes Laboratories in January 1964. After a year managing a community pharmacy, he re-joined Eli Lilly's capsule technical services department in January 1967, working in the empty capsule manufacturing area and supporting customers in Europe, the Middle East and the USA. In his spare time, as an external student, he obtained an MPharm from UWIST in 1973 for his thesis "Hard gelatin capsule colourants, a quantative and qualitative study." In 1966, he established a new PSGB Branch in North Hampshire, serving as chairman, secretary and treasurer, and was also chairman of the Wessex Region for six years. He was a member of the PSGB Industrial Pharmacists' Committee, and was awarded a Fellowship of the Royal Pharmaceutical Society in 1989.

Following early retirement in 1993, he worked as a capsule consultant. In 1997, he joined Shionogi Qualicaps, writing technical documents and retired in 2018. Between 1964 and 2016, Brian published more than 50 papers. He co-edited *Pharmaceutical Capsules* and contributed chapters to five textbooks. He has presented papers on capsules at 33 symposia and 19 posters at conferences. He has been granted two European and one US patent for capsule improvements. Between 1970 and 1990, he gave annual lectures on capsules to ten UK universities, and visited others in Iran, South Africa,Turkey and the USA.

He was appointed Honorary Lecturer at the Welsh School of Pharmacy in 1994, and was Honorary Senior Lecturer from 2004 to 2019.

Staff and facilities

Having taught botany at the Welsh School of Pharmacy for 20 years, J. Mangan retired on 31 January 1945. In June 1947, lecturer H. A. Perkin took up a post as head of the Dundee Technical College School of Pharmacy. When Vernon Lloyd spoke at the Aberdare and Merthyr PSGB branch in December 1949 on pharmaceutical education in Wales, it was reported that "Staff shortages at the College were also fully discussed and Mr Lloyd expressed the hope that the present difficulties would soon be overcome." Terry Turner, previously a student at the School, started as Lecturer in Pharmaceutical Microbiology in January 1957, to increase the teaching in this growing area.

Meanwhile, in *The Chemist and Druggist* of 7 February 1953, a death notice for Mr Harold Aldred, lecturer in chemistry at Cardiff Technical College for over 30 years was printed with a tribute from J. Malcolm Davies: "Mr Aldred's passing will be mourned by past students of the Welsh College of Pharmacy who owe much to his teaching. His patience and his quiet humour endeared him to all; he put the welfare of his students before all else."

Marshall Davies, PhC student in 1959 and subsequently Director of Boots and PSGB President, remembers a good atmosphere amongst staff and students:

"The academic staff were great, interested in us and very supportive...The PhC course was intensive with lectures and practicals morning, noon and night. We had a chemistry practical on Friday evenings from 6 until 9: afterwards we regularly retired to the Woodville [pub] for refreshment! Some care had to be taken because we had a dispensing practical from 9 to 12 on Saturday morning."

Looking at the University of Wales Calendars during this period shows the links that the School maintained with other pharmacy schools, the Department of Health and the pharmaceutical industry via its external examiners. They included Harry Berry, W. H. Linnell, J. W. Fairbairn, and Jack Rowson all from the University of London/PSGB school, H. Owen Meek and M. W. Partridge from Nottingham, Harold Davis, previously a member of Cardiff staff but now at the Ministry of Health, Norman Evers from Allen & Hanburys in Ware, Prof James P. Todd from Glasgow, and Frank Hartley, previously of the London School including during its evacuation to Cardiff, but serving as external examiner as the Director of Research and Scientific Services at British Drug Houses.

A major disruption to the Technical College facilities came with a devastating fire in the main Chemistry Laboratory on 24 January 1953. It even merited a question in Parliament regarding progress on the investigation into its cause, with the Home Secretary, Sir D. Maxwell Fyfe, confirming to the House that there was no evidence that it had been started deliberately. Informal accounts closer to home suggest that the College did well out of the associated insurance claim with the ability to re-equip the lab to the highest standard of the time.

Local pharmacy support

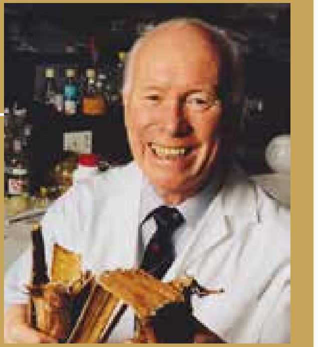
The local pharmacy community continued to be active and closely linked with the School, not least because the first generation of students who qualified there was an integral part of this community. For example, a report of the Aberdare and Merthyr Branch of the Pharmaceutical Society from February 1939 announced that Mr Haydn Parry had been appointed President. He was a past student at Cardiff Technical College before establishing his own business in Nelson. Similarly, L. Livesey was reported as the new President of Cardiff PSGB Branch in March 1939. Having qualified at the Welsh College of Pharmacy in 1930, he also captained both the football and cricket teams, returning the highest batting average in both years he was a student. In 1945, Mr A. L. Davies became new chair of the Cardiff Branch. He had been educated at the Technical College, qualifying in 1925.

The influence of the School's alumni can be traced through the pages of the pharmacy journals. In 1946, Mr M. Fay, winner of the Pharmacognosy prize and bronze medal for dispensing whilst a student in Cardiff in 1928-9, became new president of the Bournemouth PSGB branch. In the same year, Mr W. C. S. Thomas, who was one of the first students qualifying in 1920, became chair of the South West London Chemists' Association. *The Chemist and Druggist* reported in December 1947 that Mr Albert William Austin PhC had been elected to the board of Cheers and Hopley Ltd in Chester. He had received the Albert Hagon Memorial Commemorative Medal for best Welsh Chemist & Druggist student in 1938. In 1949, Mr Evan C. Meredith was elected new president of the Wembley Chemists' Association. He had taken the Apothecaries' Hall certificate in 1922, then worked as dispenser at the Royal Gwent Hospital, Newport before qualifying as a pharmacist at the School in 1926. Dr Colin Melville took a more academic route, with the PhC and BPharm at the School in 1936, followed by work as a demonstrator and research assistant before being appointed assistant pharmacist at Cardiff Royal Infirmary. He moved to Leicester School of Pharmacy as a lecturer where he gained his PhD, and was elected as chair of the Manchester Pharmaceutical Association (junior section) in 1949. Others followed similar academic paths: Mr V. Walters who gained his BPharm and PhC at the School in 1946, was appointed assistant lecturer in pharmaceutics at Chelsea College in 1955. Mr O. F. Morgan, who qualified at the School in 1933, took up the role of general manager of the home sales department at Glaxo, Greenford in 1950.

Other alumni followed more political routes. In 1952, Harry Long who had qualified from the School in 1921, stood as an (unsuccessful) candidate for the PSGB Council. Mr W. Talvan Rees, who had gained his Chemist & Druggist qualification in Cardiff, served as chairman of the National Pharmacists Union (now the National Pharmacy Association) in 1955-6. In 1957, he was elected president of the Chemists' Federation. In the same year, Mr D. W. H. Roberts was awarded the MBE in the New Years Honours List. Having qualified from the School in 1928, he worked as a retail pharmacy manager until his appointment as pharmacist at the Prison Hospital, Wormwood Scrubs in 1931. From 1940 to 1949, he was stationed at Brixton Prison, and then returned to Wormwood Scrubs as chief pharmacist. He was also the chair of the Institution of Professional Civil Servants Home Office Branch, and the Vice-Chair of the London Branch of Guild of Public Pharmacists.

Meanwhile, the School reached out to other institutions, both locally and further afield. In October 1946, the Technical College hosted a meeting of Cardiff PSGB branch with Captain D. P. Allen speaking on 'Pharmacy and the Pharmacist in India.' In 1953, the PSGB Curator (and external examiner for the Welsh School) Dr Rowson arranged an exhibition for the British Medical Association annual meeting in Cardiff, with visitors from the University College of South Wales, the Cardiff and Swansea PSGB branches and pharmacy students. Also that year, the College was one of the pharmacy schools hosting the Franco-British Pharmaceutical Commission, with talks on Pharmaceutical Education in France and Methods of Payment for Pharmaceutical Supplies in the French Health Service. *The Chemist and Druggist* reported large audiences of students, and that the French pharmacists were "impressed by the new aseptic dispensing laboratory, and later they visited the department of pharmacology at the School of Medicine." The Commission visited again in 1958.

Terry Turner
1929-2019

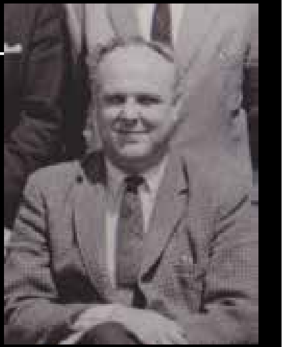


Terry Turner started his pharmacy career aged 14 with the renowned Cardiff pharmacy, Robert Drane. After National Service with the Welsh Fusiliers, he began the BPharm course at the Technical College in 1951. Following a short stint as manager at Drane's pharmacy, he returned to the School as Lecturer in Microbiology in 1957, becoming Senior Lecturer in Pharmacognosy and Head of the Pharmacognosy department. He gained his MPharm in 1960 for work on species of *Strychnos*. He was the founding Director of the School's Surgical Dressings Research Unit, a world first. In 1970 he was appointed Chairman of the PSGB's Committee on Surgical Dressing Performance, and also to the *British Pharmaceutical Codex* Sub-Committee on Surgical Dressings. He was also co-editor of the *Journal of Wound Management*, a member of the *European Pharmacopoeia* advisory group, and served on the UK Committee on Dental and Surgical Materials for more than ten years from 1980.

Terry was a founder member and chair (1980-81) of the new Pharmaceutical Society Welsh Executive or Rhanbarth de Cymru, established in 1976. He was elected as a PSGB Fellow in the same year, was awarded the OBE in 1989 for services to pharmacy in Wales, and the PSGB Charter Silver Medal in 1991 for outstanding service to the profession.

His life-long interest in pharmacy history was accompanied by collecting material, offered from colleagues, closing down businesses and found in sales. He was a founder member of the British Society for the History of Pharmacy in 1967, and was a past president of the Welsh History of Medicine Society. From the early 1980s, items from his collection were displayed in the Redwood Building, steadily growing to its current total of around 1,500 objects over three floors. In 2000, he also established the Apothecary's Hall at the National Botanic Garden of Wales. In 2009, he gave his collection, known as The Turner Collection, to the University.

Ken James



Dr Ken James was an undergraduate at the School, and the second person to gain the new MPharm in 1957 with research on with "The hydrolysis of acetylsalicylic acid from aqueous suspension." He joined the School as Assistant Lecturer in Physical Pharmacy in 1955, moving to become Senior Lecturer in Pharmaceutics, holding the post into the early 1980s. His research work on the field on solubility was renowned.

He is remembered as a gentle man and a gentleman with a great rapport with both students, and colleagues, particularly as a father figure to young academics. In 1968, he was elected Chairman of the Monmouth and Newport PSGB Branch.

He could also speak an obscure Nigerian dialect, learned while carrying out his National Service as a pharmacist for two years with a Nigerian regiment in the British Army posted in Singapore, due to a mistake with joining his Welsh Regiment there.

He was also a keen swimmer at top level and a respected official. He was a passionate fan of Newport rugby club. Ken died soon after retiring from the School, in his house in Newport, watching rugby in his armchair.

Research

On 16 August 1941, *The Chemist and Druggist* reported that the University of Wales "has recently instituted a degree of M.Pharm. after a course of research, and its approval, and subsequent to graduation as a B.Pharm. or approved equivalent." The introduction of a research Master of Pharmacy (MPharm) degree was the first such degree in Great Britain. Cardiff was followed shortly afterwards by Nottingham and London Universities. The regulations required that the research area must be one of the Final Exam subjects within the BPharm. Graduates of the BPharm (Wales) were entitled to carry out their Masters research elsewhere. Those who had gained their BPharm elsewhere had to undertake their research for at least two years in the Welsh National School of Medicine. The Department of Pharmacy at the Technical College was regarded as associated with the Medical School as a place of research, and therefore an acceptable location.

Dinah Mary James seems to be the first person listed with the Welsh MPharm in the University Calendar of 1949-50. Her research topic was "The action of antiprotozoal and similar drugs on infusoria." By 1954, she is listed as an advisory internal examiner for the Pharmacology practical exam, so seems to have remained in the department. The next MPharm listed in the University Calendar is Kenneth Charles James in 1957 on "The hydrolysis of acetylsalicylic acid from aqueous suspension."

The British Pharmaceutical Conference had continued during the war as an opportunity to share research findings and take part in the wider pharmacy community. David P. Evans and Arthur G. Fishburn, from the Cardiff Technical College Pharmaceutical Chemistry Laboratory had a paper accepted in 1943 titled 'The Mechanism of the Disinfection of Bacteria by Water-soluble Bactericides.' At the 1946 BPC, J. Malcolm Davies presented 'The Fruit of Lobelia Inflata Linn.' At the same conference, Mr B. J. Thomas, now Manager of Allen and Hanburys Ltd, 7 Vere Street, London, read what must have been a cutting-edge paper on the problems of retail dispensing of penicillin. The drug had only been made available for civilian use on 1 June 1946. Thomas had studied at Cardiff, qualifying in 1937 and winning medals in Pharmaceutics and Pharmacology. In 1953, D. G. Lewis was the co-author of a paper on the microbiological assay of mixtures of penicillin and dihydrostreptomycin, presented at the London BPC. Now a member of the microbiology department of Boots Ltd, he had qualified BPharm and PhC at Cardiff.

Efforts were made to encourage pharmacy research within the School and the University, in spite of fairly basic facilities. In October 1944, the first of a series of postgraduate lectures were inaugurated by the Cardiff PSGB Branch and held at the College. Vernon Lloyd spoke on 'The Trend of Modern Pharmacy' including galenicals and crude drugs being replaced by pure chemicals, the introduction of synthetic chemicals, and advances in Physiology and Bacteriology. In July 1950, an announcement of three new Wellcome Pharmaceutical Research Fellows included Mr J. R. Hodges BPharm (Wales) who was a member of staff at the School in 1943-44 and then in the department of Pharmacology at the Welsh National School of Medicine the following year. His Wellcome-funded research would be carried out in Pharmacology at "the Square." Meanwhile Mr G. P. Lewis, also BPharm (Wales) was funded to carry out research into newly synthesised antihistamine compounds at the Welsh National School of Medicine. In 1953, the PSGB Council provided a grant of £600 to Mr Seymour Jeffrey Corne BPharm (Wales) for two years to work at the Welsh National School of Medicine on "an investigation of the action of British Anti-Lewisite on enzyme systems in vitro and in vivo." In 1956, the School's promotional listing included the details that facilities were provided for the MPharm degree of the University of Wales or a PhD in Pharmacology. Research was available in Pharmacology, Bacteriology and Physiology in relevant University of Wales departments, with an annual intake of around four postgraduate research students. As an inspection report in 1951 had recognised, room for serious research within the Technical College building was significantly limited but that "research by the staff would be possible if there was some adequate space set aside for it."

Studying at the School was also clearly a good foundation for a research career. In 1957, Dr R. J. Boscott was appointed Head of Chemical Research at Pfizer. He qualified from the School in 1937, and went on to work as a senior assistant organic chemist in the hormone department of British Drug Houses, research organic chemist in the endocrine unit of the London Hospital, lecturer in endrocrine chemistry at Birmingham Medical School, and chief chemist of Standard Laboratories (specifically engaged in cancer research).

WELSH STUDENTS AT GREENFORD: Visiting the Greenford, Middlesex, plant of Glaxo Laboratories, Ltd., on November 3, were twenty-six members of the Welsh Pharmaceutical Students' Association. The students saw stages in manufacture and packing and met pharmacists and staff of the company's research division.

The Chemist and Druggist, *November 1954*

Student life

In the years immediately following World War Two, the majority of students, certainly in the Pharmacy department, had served in the forces, and there were relatively few women in each cohort. Terry Turner, BPharm student in the early 1950s, remembers that the atmosphere in the School bore a strong resemblance to his army experiences: the students were used to formal organisation, to run their own affairs, and even wore items of army uniform, as clothing had only recently come off ration.

After the War, student visits to the Glaxo Labs at Greenford in West London continued with posed photos appearing in *The Chemist and Druggist* most years.

Arthur Fishburn
1910 - 2013

Portrait by Grace Wheatley, 1947 (Robert Bear)

Arthur Fishburn was born in Cardiff, qualifying as a Pharmaceutical Chemist at the School in 1933. He also achieved associateship of the Royal Institute of Chemistry through the School's exams, and later became a Fellow of the Institute. He spent nine years as Lecturer in Pharmaceutical Chemistry at the Technical College before moving into industry.

He became manager of the pharmaceutical development branch of Imperial Chemical (Pharmaceuticals) Ltd. and in 1949, on behalf of ICI he took out a US patent for Animal Hypnotic Composition, a new composition for injections, particularly in large animals comprising an aqueous dispersion of finely powdered 2-(β-napthoxy)-ethanol.

He was a member of the pharmacy sub-committee of the *British Pharmaceutical Codex* Revision Committee, of the *British Vetinerary Codex* Committee, and the nominated British expert at the World Health Organisation meeting on quality control of drugs in Warsaw in 1962. From 1964 until 1968, he served as a pharmaceutical industry representative on the School's Advisory Committee.

On being awarded the PSGB Harrison Memorial Medal in 1965, PSGB President Mr J. Bloomfield said: "Mr Fishburn was extremely well known in pharmacy, not only in Britain, but overseas also. He was a most unassuming person who, in his quiet way, had made a considerable contribution to human medicine. But that was not all, for, as chairman of the formulary subcommittee of the *British Veterinary Codex* Committee, through two editions, he had been largely responsible for defining the scientific formulations of veterinary medicine."

He became principal medicines inspector for the Department of Health in 1970, then pharmaceutical director of the Department's medicines division in 1975. He was awarded the PSGB Charter Gold Medal in 1976.

The College prospectus for 1947-48 included a new section on the Students' Union, membership of which was compulsory for all full-time students at £1 10s 0d each year. This fee covered all societies and activities including a Debating Society, Dramatic Society, Musical Society, Photographic Society, Student Christian Movement, Chess Club and Rhythm Club. Rugby, Association Football, Hockey and Cricket Clubs had use of 13 acres of playing fields a few minutes walk from the College. The Tennis Club used courts next to the College and the Badminton Club played in the College Hall. The Union also boasted a new Literary Society with "eminent speakers" invited to address the students. The Union's governing body numbered elected members from each College department.

In 1956, the School promoted that "Comprehensive athletic and cultural activities are available to pharmacy students in the College and University." In April 1957, the Cardiff football team reached the final of the inter-college cup competition for pharmacy students at the United Chemists' Association Ltd. (UCAL) works sports ground in Cheltenham. They beat Leicester 5-2 with "a faster and more integrated game of football" according to the report in *The Chemist and Druggist*.

As student numbers increased both at the College and across the University, the pressure on accommodation grew. In 1956, refugee Istvan Selmeczi was admitted to the School, one of 200,000 Hungarians fleeing their country after the Soviet invasion. Brian Jones (BPharm 1958-61) remembers that students came from far and wide: most were from all over what was then Glamorganshire including Swansea, Neath, Abercynon, Bridgend, and Pontypridd; but three came from England, from Brighton, Oldham and London. Most lived in digs, apart from the two students from Pontypridd who lived at home, and Brian, who lived in the men's hall of residence for the full three years, sharing a room with three other students in his first year. Jean Barr (BPharm 1956-1959) had 13 students in her intake with two from Cardiff, one from Caerphilly, three from England (Barnsley, Nottingham and Derby) and the rest from West Wales. She remembers that some lived in digs or the Young Women's Christian Association hostel, but several moved into shared flats later.

Socialising was not necessarily easy though. There was no space within the Technical College building where students could mingle. Many students made friends through sport. Brian Jones was on the College sports committee and recalls that sports enabled pharmacy students to mix with those doing other subjects, even to the extent that there were complaints from other College students that the pharmacy teams were playing people in their teams that never attended lectures in the building. Jean Barr joined in with various University Union activities and she and a number of her peers played sports for the University teams including hockey, lacrosse, soccer and rugby.

As the pharmacy year groups were so small, Jean also recalls that they did most social activities together, including with some of the staff. When three assistant lecturers were employed in her final year, they were not much older than the students, and so joined in their social life. For Jean, this was significant as she eventually married one of them!

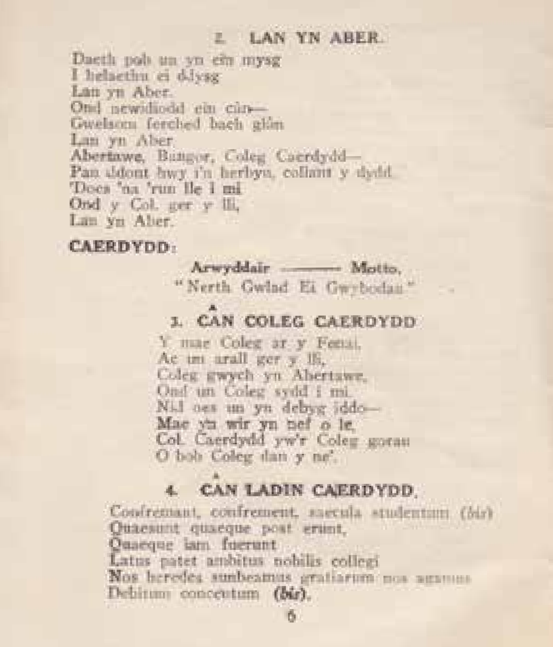
In May 1958, 17 year old pharmacy student Gillian Rees was chosen as Miss Empire Games, official Welsh hostess of the Games, to be held in Cardiff in July. A photo story in *The Chemist and Druggist* described her as living with her parents in Ystrad Mynach, and working as an assistant at the Bargoed branch of Timothy Whites and Taylors, since she left school a year earlier. She had won the title and £250 prize money against 27 other finalists from across Wales, and hoped to put her winnings towards her pharmacy studies. The piece concluded that she was worried about how to combine her Empire Games engagements with her exams which were in the middle of the international event.

The School played a key role in the formation of the national British Pharmaceutical Students' Association (BPSA). Announced in 1942 as the Pharmacy Faculty of the National Union of Students, initial meetings apparently took place under the PSGB School in London while on air-raid duty with the Secretary & Registrar, F. W. Adams. The first official committee meeting of the BPSA was held on 30 July 1943 in Cardiff. The first BPSA secretary was Mr C. R. Dimon from the Welsh College of Pharmacy. In 1950, the School hosted the BPSA annual conference, and Mr G. P. Lewis of Cardiff was elected as BPSA President.

Obviously unaware of the formation of an Old Students' Association in October 1921, a notice in The *Pharmaceutical Journal* in December 1952 informed readers that the Welsh Pharmaceutical Students' Association were calling a meeting of past students at the Old Arcade, Church Street, Cardiff at 7pm on 14 January 1953, with the object of forming a past students' association. It seems to have been successful, with subsequent meetings including a "get together" of past students advertised for 10 November 1959 at the Globe Hotel, Castle Street, Cardiff.

Gillian Rees, Miss Empire Games 1958, The Chemist and Druggist, 17 May 1958

Brian Jones and fellow students dancing the can-can on a French-themed Rag float in 1961. (Brian Jones)



2. LAN YN ABER.

Daeth pob un yn ein mysg
I helaethu ei ddysg
Lan yn Aber.
Ond newidiodd ein cân—
Gwelsom ferched bach glân
Lan yn Aber
Abertawe, Bangor, Coleg Caerdydd—
Pan ddont hwy i'n herbyn, collant y dydd
'Does 'na 'run lle i mi
Ond y Col. ger y lli,
Lan yn Aber.

CAERDYDD:

Arwyddair ——— Motto,
"Nerth Gwlad Ei Gwybodau."

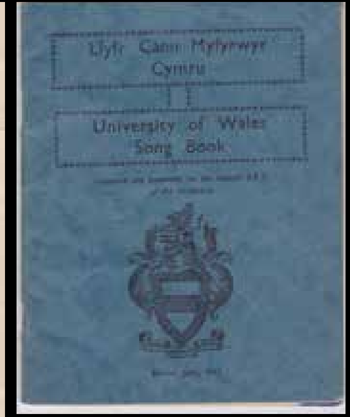
3. CÂN COLEG CAERDYDD

Y mae Coleg ar y Fenai,
Ac un arall ger y lli,
Coleg gwych yn Abertawe,
Ond un Coleg sydd i mi.
Nid oes un yn debyg iddo—
Mae yn wir yn nef o le,
Col. Caerdydd yw'r Coleg gorau
O bob Coleg dan y ne'.

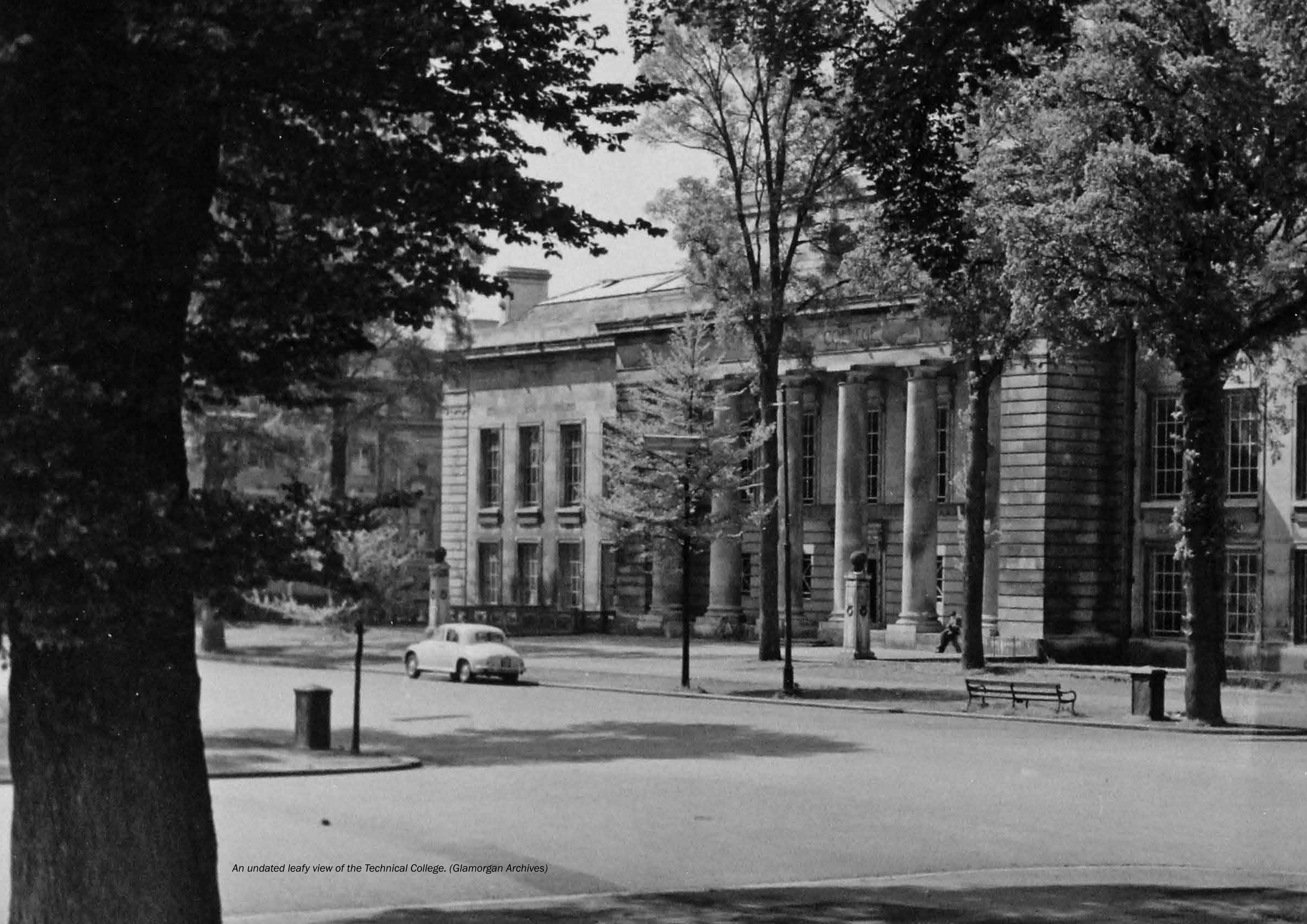
4. CÂN LADIN CAERDYDD.

Confremant, confrement, saecula studentum *(bis)*
Quaesunt quaeque post erunt,
Quaeque iam fuerant
Latus patet ambitus nobilis collegi
Nos heredes sunbeamus gratiarum nos agamus
Debitum concentum **(*bis*).**

6



The 1951 edition of the University of Wales Songbook included College songs in Welsh and English for Aberystwyth, Caerdydd, Bangor, and Abertawe, plus a variety of Welsh and English songs including 'Mrs Jones' Mangle', 'Riding Down from Bangor', and the more dubious 'Darky Sunday School' and 'Three Jews.' (Brian Jones)

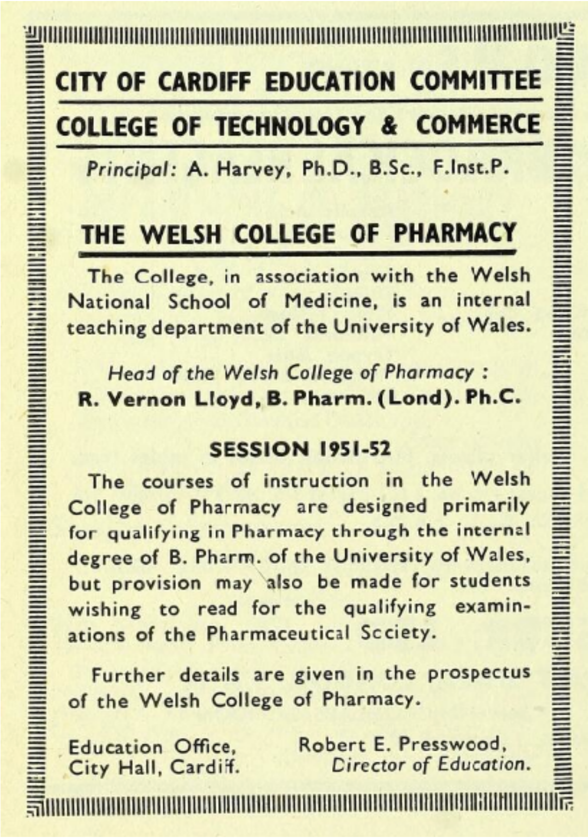


An undated leafy view of the Technical College. (Glamorgan Archives)

Technical College to WCAT

In 1951, Cardiff Technical College became Cardiff College of Technology and Commerce. It had become clear that the original concept of an “omnibus” college catering for all technical education from elementary to the most advanced levels was no longer appropriate, and this was not just the case in Cardiff. An article in *The Chemist and Druggist* in September 1947 provided the national context for technical education in Britain. It explained that there were about 30 technical colleges nationally, all running courses that were equivalent in standard to degree courses. Yet, the importance of these colleges to the nation had not been recognised, and they were viewed as the poor relations of universities “considered as offering an inferior standard of training at a lower cost to the students. The subordinate role was, in most instances accepted, and the colleges were modestly content with the knowledge that each year they prepared large numbers of successful students for the examinations of London University and for several professional and scientific societies.” The piece went on to explain that there had recently been a Parliamentary and Scientific Committee special subcommittee formed to study the position of technical education, with the aim to raise some subject areas to university degree standard, including pharmacy. There was a suggestion that this would need additional changes to support technical education more effectively including regional academic boards, a National Council on Technology, coordinated scholarships, and better pay for staff, in order to improve and recognise the status of technical and technological education across the country.

In 1957 the College became the Welsh College of Advanced Technology (WCAT), one of a number of CATs around the country established in response to a Government White Paper in 1956 that aimed to stimulate higher level technical education. With a proposed expenditure of £70 million over eight years, the Government planned that the CATs would expand struggling technical education with full-time, part-time and sandwich courses, delivered in partnership with satellite colleges in each region. At this point, the Welsh College of Pharmacy was renamed the Welsh School of Pharmacy. In 1959 Vernon Lloyd was appointed Vice-Principal of the Welsh CAT, whilst remaining Head of the Welsh School of Pharmacy. The School’s links with the University remained strong, specifically through the BPharm (Wales). A new article in the University of Wales’ charter in 1958 re-stated procedures previously established with the Technical College that the Head of the Welsh School of Pharmacy would be appointed by the governing body of WCAT on the recommendation of a Committee of Selection consisting of the Vice-Chancellor as Chairman, three members selected by the University and three members appointed by the governing body of WCAT. The University’s Court would provide for recognition of teachers in WCAT who gave instruction for the BPharm.



CITY OF CARDIFF EDUCATION COMMITTEE

COLLEGE OF TECHNOLOGY & COMMERCE

Principal: A. Harvey, Ph.D., B.Sc., F.Inst.P.

THE WELSH COLLEGE OF PHARMACY

The College, in association with the Welsh National School of Medicine, is an internal teaching department of the University of Wales.

Head of the Welsh College of Pharmacy :
R. Vernon Lloyd, B. Pharm. (Lond). Ph.C.

SESSION 1951-52

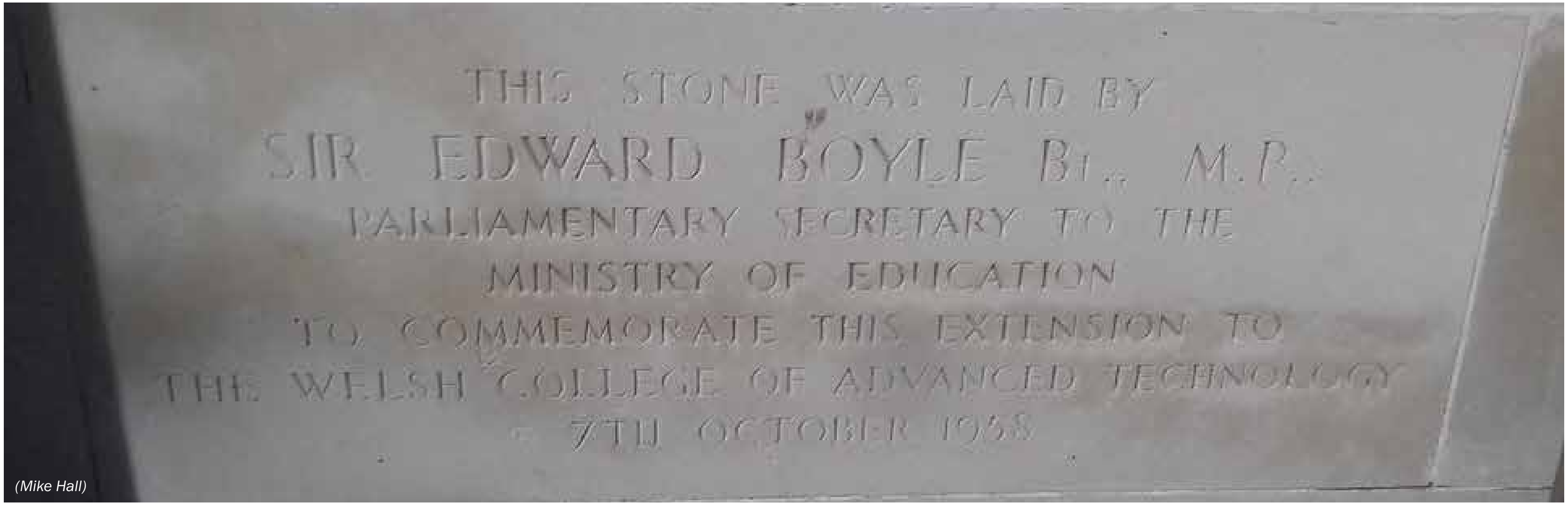
The courses of instruction in the Welsh College of Pharmacy are designed primarily for qualifying in Pharmacy through the internal degree of B. Pharm. of the University of Wales, but provision may also be made for students wishing to read for the qualifying examinations of the Pharmaceutical Society.

Further details are given in the prospectus of the Welsh College of Pharmacy.

Education Office,
City Hall, Cardiff.

Robert E. Presswood,
Director of Education.

This advert featured in The Chemist and Druggist *on 4 August 1951 under the new heading of the City of Cardiff Education Committee College of Technology and Commerce. (The Chemist + Druggist)*


THIS STONE WAS LAID BY
SIR EDWARD BOYLE Bt., M.P.
PARLIAMENTARY SECRETARY TO THE
MINISTRY OF EDUCATION
TO COMMEMORATE THIS EXTENSION TO
THE WELSH COLLEGE OF ADVANCED TECHNOLOGY
7TH OCTOBER 1958

(Mike Hall)

> **“although it is now fifty seven years since I left its hallowed walls, I still have the fondest memory of my time in Cardiff. Long may it prosper.”**
> Marshall Davies, RPSGB President 2001-3 (1959, PhC)

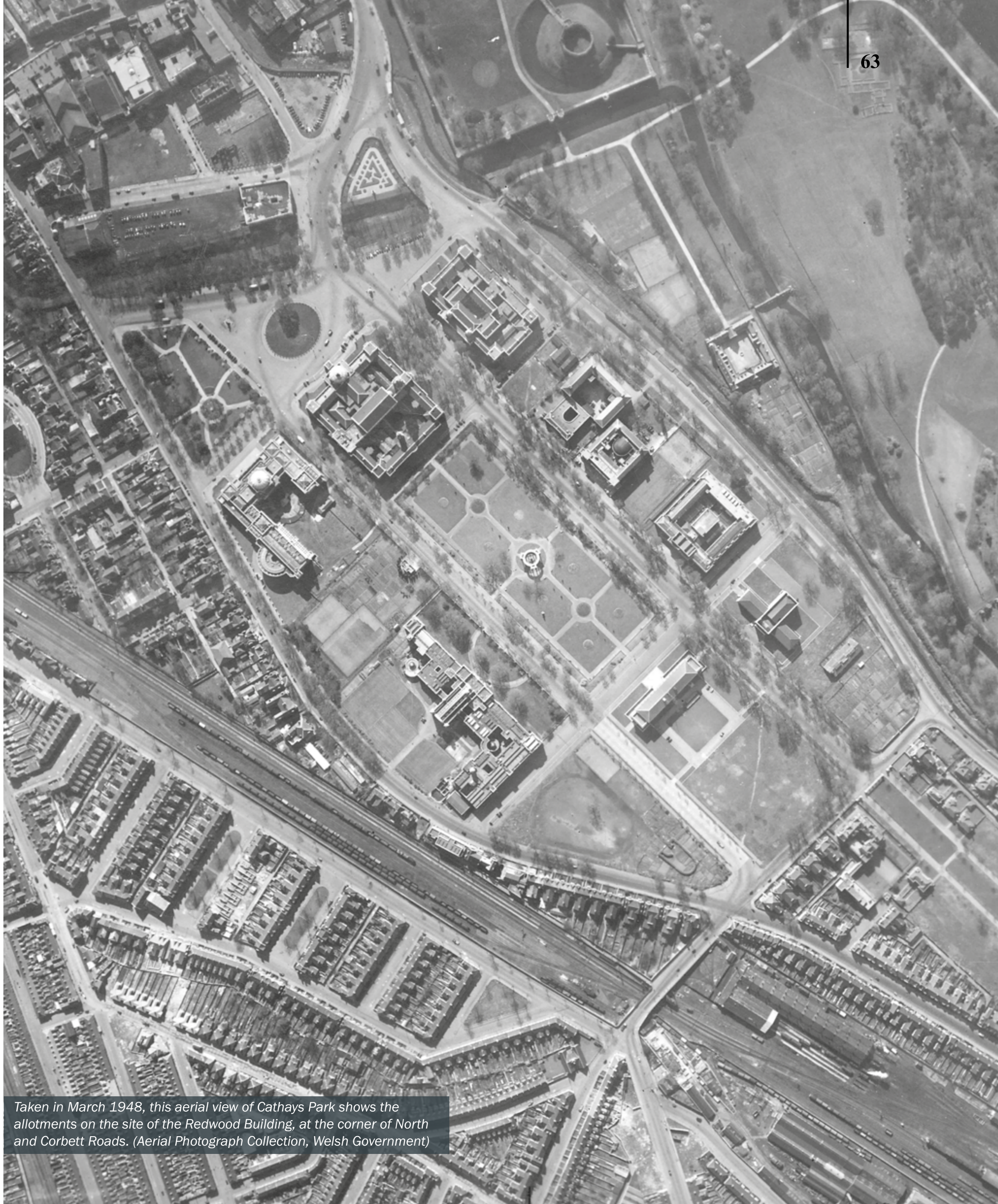
Although the status of the School was confirmed within the new College of Advanced Technology, there were more practical issues to overcome. The School was the only one in Wales. In April 1950, Mr T. Heseltine, Member of the PSGB Council, called for more pharmacy schools to prevent students travelling great distances. He gave Swansea as an example, stating that students were having to travel nearly 50 miles to Cardiff for their pharmacy education. Even if this was possible, the pressure of numbers was becoming problematic. An account of a meeting of the Swansea and West Glamorgan PSGB Branch in December 1951 recorded the complaint “that local students had been unable to obtain places in the Welsh College of Pharmacy at Cardiff. The [PSGB] President replied that the Council was satisfied that there was an adequate number of places throughout the country. He expressed his sympathy for the ideal that there should be a Welsh College capable of absorbing all Welsh students.” Already in the 1949-50 Prospectus, a section headed “Important” stated that “Owing to the limited accommodation for pharmaceutical subjects, admission to the Final Pharmacy courses will be by selection. Preference will be given to candidates wishing to pursue Final courses for the degree of B.Pharm. of the University of Wales.” However, the annual educational supplement in *The Chemist and Druggist* in August 1952 stated that there were no vacancies for the BPharm at Cardiff.

It was clear that the Technical College was becoming ridiculously overcrowded and outdated, not just for Pharmacy. The Catering, Building and Art Departments had moved out into two disused schools. Between 1948 and 1954, a separate Cardiff College of Music and Drama was founded, and a separate College of Art was established in 1950. In 1954, the Llandaff Technical College opened and took over the less advanced part-time courses from the Technical College. In 1955, the Reardon Smith Nautical College was established and offered a one-year residential pre-sea Master Mariners course. In this way, several courses were removed from the College, with the plan for it to concentrate on advanced scientific courses.

At the PSGB Branch Representatives meeting in London in May 1955, “Mr G .G. Davies, Swansea, enlisted the support of England for additional places in pharmacy schools in Wales and Mr C. W. Maplethorpe (chairman of the Education Committee) announced that the number of places at the Welsh School of Pharmacy, Cardiff, was being doubled.” *The Chemist and Druggist* reported in November 1955 that “a considerable expansion of the facilities for training pharmacists…is forecast in the plans of the local Education Authority for Cardiff to transfer the Welsh College of Pharmacy from the existing building to the proposed new technical college. The [PSGB] Council are satisfied that this arrangement will provide reasonable opportunities for Welsh students to train within the Principality.” Promotional material for the School in July 1956 stated that “Plans for a new college building provide for double the present intake of post-intermediate students and for an annual intake of about 12 post-graduate students in pharmaceutical subjects.” However, it admitted that only very few overseas students could be considered at the moment, and that they were no vacancies in the BPharm course for the next session. This was still the case three years later in *The Chemist and Druggist*’s annual educational supplement of August 1959 with no vacancies for either the PSGB Qualifying Exam or the degree course.

The light was there though at the end of the tunnel, initiated by the gift in 1947 by the Marquis of Bute of land to the city, including Cardiff Castle and Bute Park. Although Cardiff Council had bought Cathays Park from the 3rd Marquis of Bute in 1898, an acre in the north-western corner was excluded from the sale, retained by Lord Bute. It had previously been the site of Cathays House built by the first Marquis of Bute. Although demolished in 1814, the mansion’s ice house still remained into at least the early 20th century. The Council gained possession of part of the plot and established the offices for the National Health Insurance Commissioners in Wales by 1914. However, the rest of the land was a patchwork of allotments and sheds, bound by a small road to its West that is now the North Road dual carriageway. By the late 1950s, the whole space had been acquired by the Council, perhaps as a “tidying up” of the Marquis of Bute’s gift a decade earlier. This site provided the opportunity to plan a brand-new building as an extension to the Welsh College of Advanced Technology, and to provide the space and facilities that were so desperately needed. The foundation stone for the new building was laid by Sir Edward Boyle, Parliamentary Secretary to the Ministry of Education on 7 October 1958.

At its first meeting on 26 November 1958, the WCAT Advisory Committee for Pharmacy heard that between 1930 and 1958, the School had achieved 659 passes for the PSGB Chemist and Druggist exam, 269 passes for the PSGB Pharmaceutical Chemist exam, 13 BPharm (London) graduates and 232 BPharm (Wales) graduates. They looked forward to developing from these significant successes in a new building with improved facilities and educational opportunities.

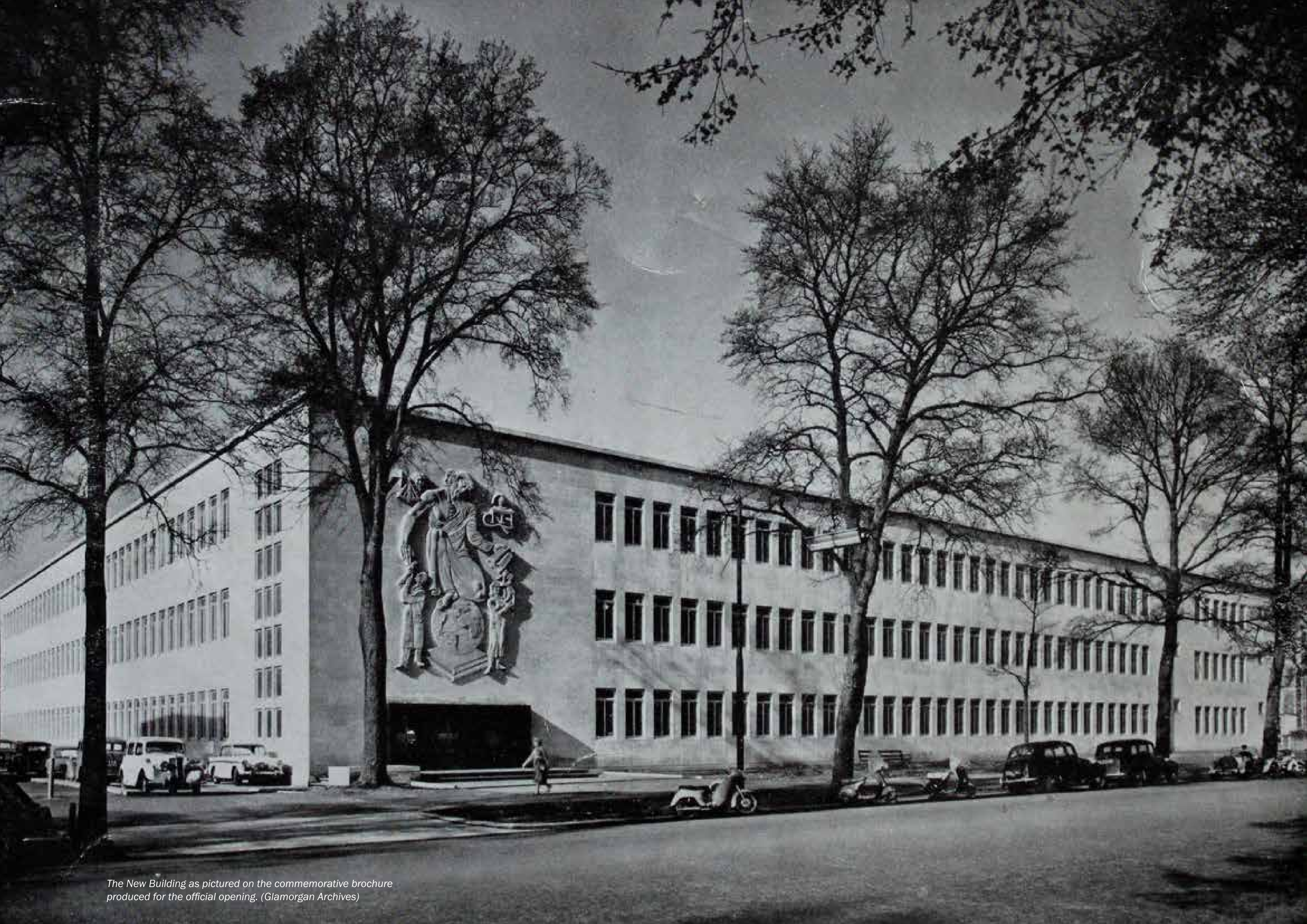


Taken in March 1948, this aerial view of Cathays Park shows the allotments on the site of the Redwood Building, at the corner of North and Corbett Roads. (Aerial Photograph Collection, Welsh Government)

CHAPTER **FOUR**

4

“Designed as a factory,
clothed as a college”
The Redwood Building



The New Building as pictured on the commemorative brochure produced for the official opening. (Glamorgan Archives)

The official opening

On 2 June 1961, HRH the Duke of Edinburgh opened the Welsh College of Advanced Technology's "New Building." Now known as the Redwood Building, it was planned to move the Welsh School of Pharmacy, and the departments of Maritime Studies, including the Navigation department, Applied Chemistry and Applied Biology out of the original Technical College and into the brand-new building. As an account of educational institutions in Cardiff in 1960 put it "the development of new courses and the higher standard of accommodation required for advanced work has resulted in very heavy pressure on the available accommodation. It has proved necessary to build a new block." For both Chemistry and Pharmacy, the improvement in facilities and space would mark a significant step-change in their activities, particularly in research. For Chemistry this included work with plastics and rubber, and with radioisotopes. The original College building that they were leaving behind could then be reconfigured to better accommodate the remaining departments of Applied Physics, Architecture, Building and Structural Engineering, Commerce and Administration, Electrical Engineering, Engineering, English and Liberal Studies, and Mathematics.

The official brochure for the New Building's opening provides a fascinating snapshot of the new building, its facilities and how the College wanted to present them to the world.

The Duke of Edinburgh was accompanied on his visit by the Lord Mayor of Cardiff, Alderman E. Ewart Pearce MBE, and A. J. Nicholas CBE, Chairman of the Welsh Committee of Commonwealth Technology Training Week. On arrival he was presented to the President of the College, Colonel C. G. Traherne who in turn presented His Royal Highness to Sir Percy Thomas, the building's architect and Mr J. H. Richardson, Chairman of Messrs J. Gerrard and Sons Ltd, the building contractors.

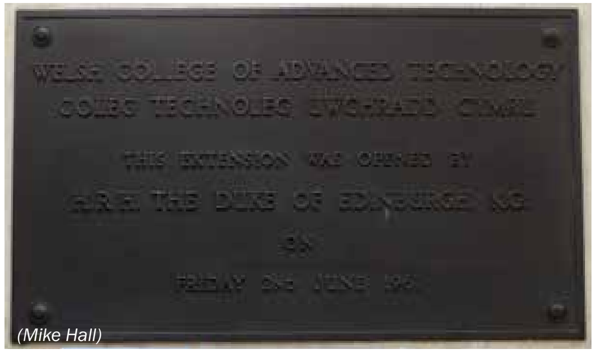
In a piece of ceremonial theatre, Sir Percy presented a key to the Duke of Edinburgh and invited him to officially open the building. Terry Turner, a young member of staff at the time, remembered that the fact that there was no key hole for the ceremonial key did not go unnoticed by the Duke!

Once inside the building, the College President presented a number of guests and representatives: Mr W. F. Cartwright, High Sheriff of Glamorgan; Rt Hon Henry Brooke MP, Minister of Housing and Local Government and Minister for Welsh Affairs; Rt Hon Lord Brecon, Minister of State for Welsh Affairs; Cllr Llewelyn Jenkins, Chairman of the College's Governing Body; Dr A. Harvey, Principal of the College; Robert E. Presswood, Director of Education and Clerk to the Governing Body; Mr R. Bazley, President of the Student Union; and Miss Margaret Rees, Vice-President of the Student Union. Following these presentations, His Royal Highness unveiled a plaque, still in its original location in the building's entrance hall.

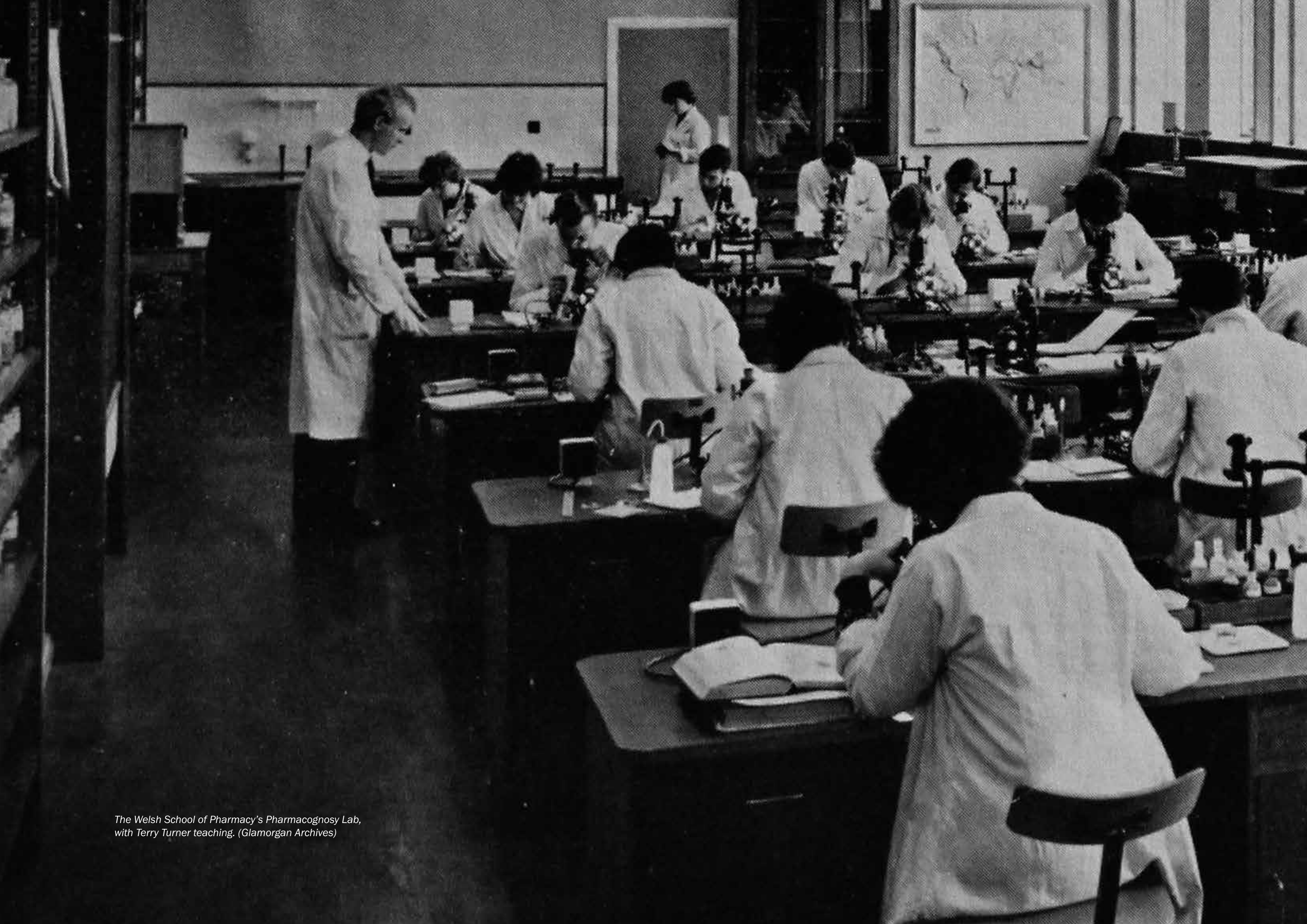
> **"Completed in 1960, its exterior design is clearly influenced by the modern tendency towards greater architectural simplicity. At the same time, however, traditional materials have been used and the careful proportioning of voids and solids, together with facings of Portland stone, should enable it to take its proper place in the world-famous sequence of public-buildings in Cathays Park"**
> Official Opening Programme

Prince Philip went on to tour the building, meeting students from the Commonwealth, then having coffee in the Senior Common Room with invited guests. According to the brochure, the guests represented "industrial, university, professional and technological interests", and included Mr Gwilym H. Hughes, PSGB President. R. Vernon Lloyd attended both as Vice-Principal of the College and Head of the Welsh School of Pharmacy. Brian Jones, a pharmacy student at the time, remembers that the official opening was held on a day in the middle of his final exams. He also remembers that there was complex choreography behind the visit: "Firstly, all in our white lab coats we were strategically spread around the building. We all saw the Duke of Edinburgh as he toured the building. As soon as he had passed, it was off with lab coats and on with tidy clothes to assemble on the stairs in the main entrance. When he came in, he looked up and said, 'You got here quick'."

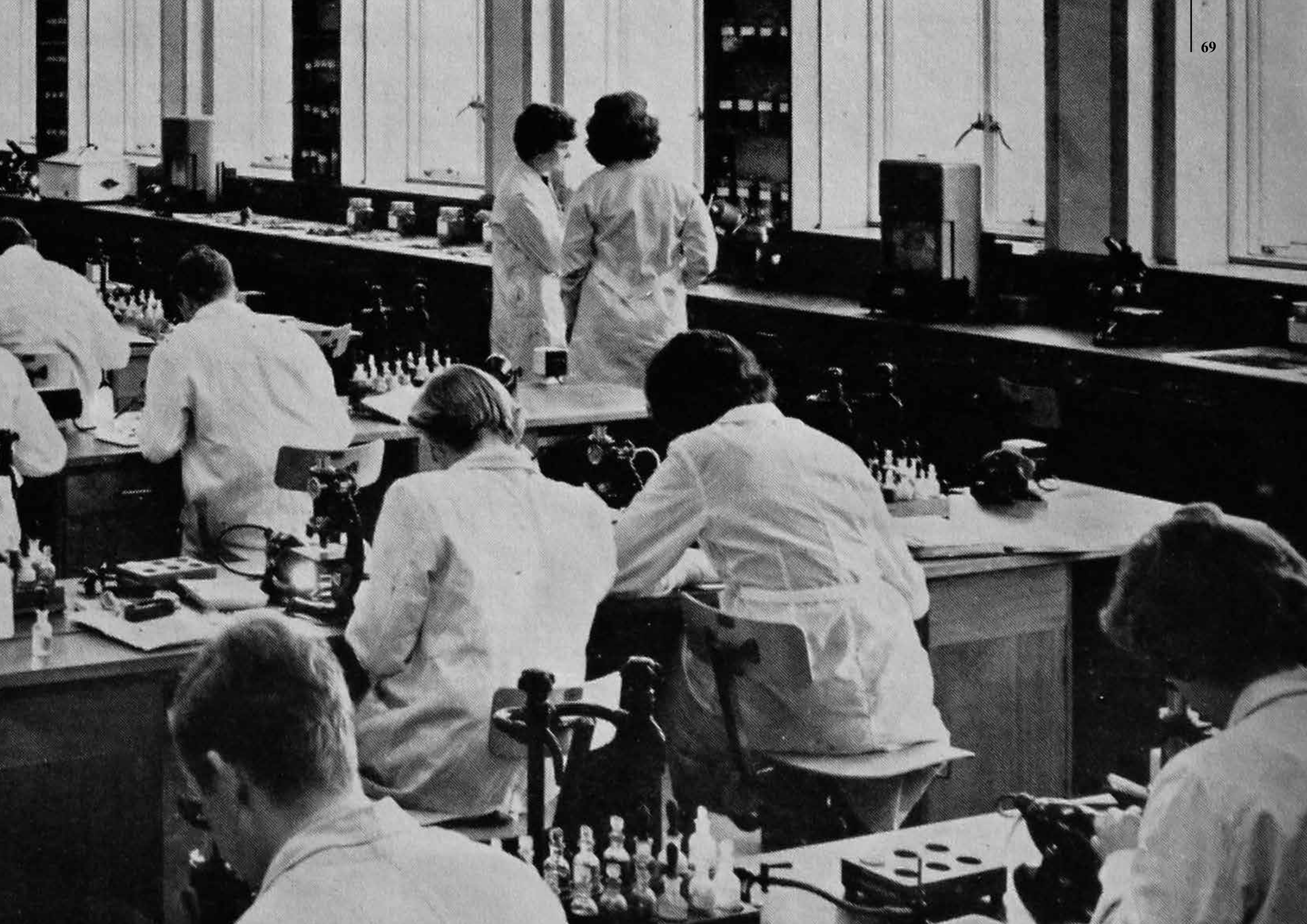
The Main Entrance has not changed much since 1961. (Glamorgan Archives)


WELSH COLLEGE OF ADVANCED TECHNOLOGY
COLEG TECHNOLEG UWCHRADD CYMRU
THIS EXTENSION WAS OPENED BY
H.R.H. THE DUKE OF EDINBURGH KG
FRIDAY 2ND JUNE 1961
(Mike Hall)

The final event was held in the building's Assembly Hall. After the National Anthem, the Chairman of the Governing Body invited His Royal Highness to address the assembly. The Duke of Edinburgh observed, "Wales has a particularly strong tradition or characteristic in its respect and belief in education. This college is another expression of that belief, and with its definite Welsh character and flavour it will play a most important part in the future prosperity of the whole Principality." After his address, His Grace Lord Archbishop of Wales and President of the Free Church Council of Wales gave a blessing, followed by a vote of thanks from the College Principal.



The Welsh School of Pharmacy's Pharmacognosy Lab, with Terry Turner teaching. (Glamorgan Archives)



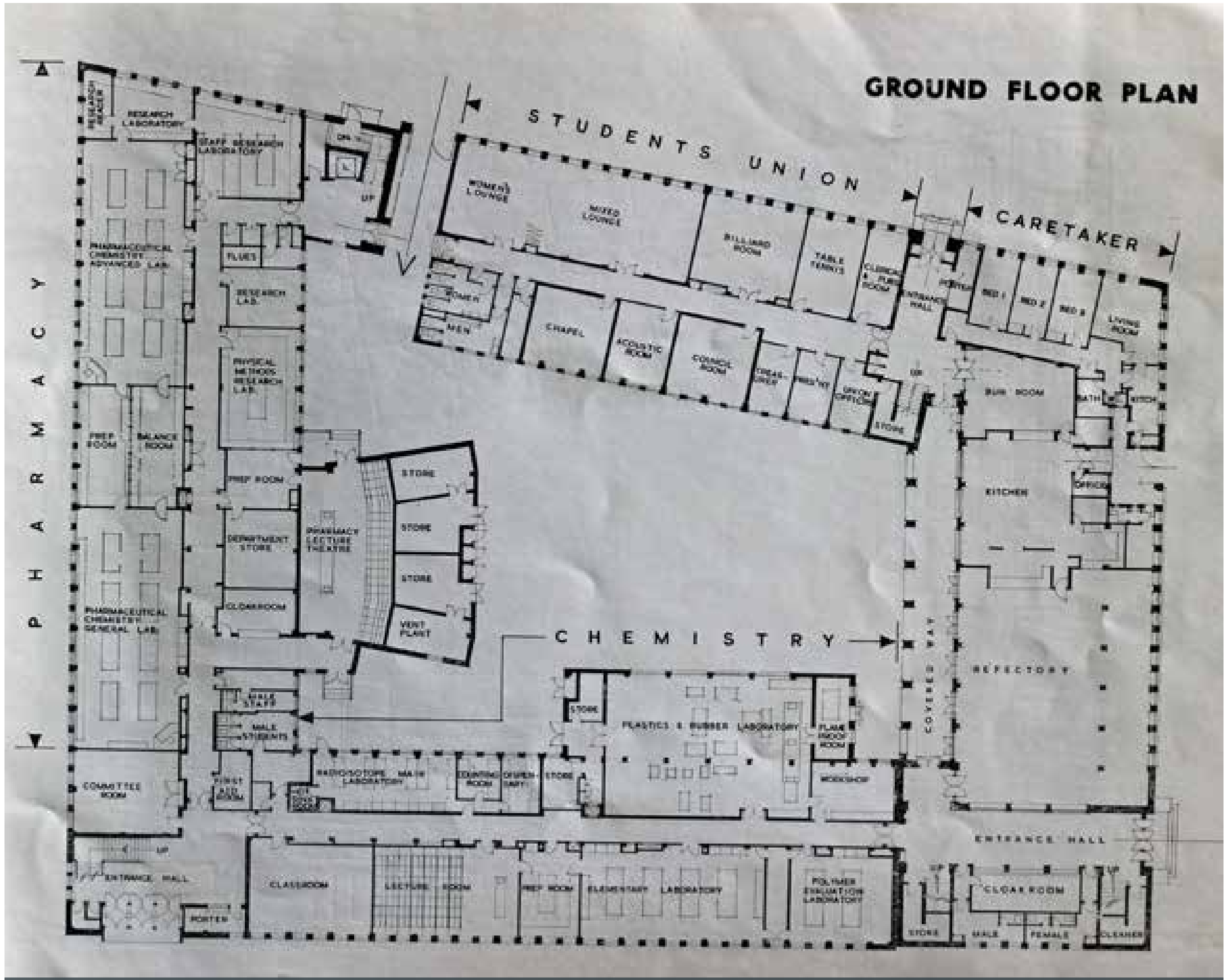
The New Building

The new building was designed to hold three departments: Chemistry and Biology, Navigation, and Pharmacy. It also had a self-contained suite for the Students' Union, and an onsite house for the caretaker integrated into the building. The Navigation Department was specifically catered for with a room fitted out as a ship's bridge with all the appropriate equipment on top of the north-west end of the building's roof. The windows gave a good view over the Bristol Channel.

The official brochure unashamedly shares the building's cost, exclusive of furniture and equipment as £624,727, which equates to about £13 million today. Its construction, materials and facilities were primarily modern, representing the commitment to invest in a cutting-edge home for the departments. As befitted a technical college, the brochure provided full technical details. Its structure consisted of a steel frame on reinforced concrete foundations, and the floors were pre-cast units. Its concrete flat roof was covered with asphalt and finished with asbestos tiles, allowing insulation from "thermal movement." The design put services as first priority and fitted the structure around them. For example, full-length vertical ducts line the corridors and lie horizontally between floors and ceilings so that power, gas, water, air or vacuum could be flexibly fed to any room. The heating system operated with low pressure hot water from oil-fired boilers, and the brochure boasted plenum ventilation for special laboratories and the large lecture theatre. This system worked with fresh air forced into the spaces needing ventilation from a plenum chamber at a pressure slightly higher than atmospheric pressure. An article in the *Pharmaceutical Journal* claimed that the ventilation plant had been installed so that it could also be used to teach students about factory ventilation.The lighting was a combination of fluorescent and tungsten filament units, particularly to avoid flickering lights in rooms where projection was used. Corridors had linoleum floors and labs had hardwood block flooring. The whole building was acoustically treated, presumably meaning that the surfaces had been considered with regard to sound-proofing to reduce the transfer of noise. An industrial colour artist was employed to advise on the colour schemes throughout. For example, the pharmacognosy lab was painted light green, chosen as restful to the eyes when a considerable amount of microscope work was being carried out. All laboratory benches had special glass drainage pipes to dispose of "chemical effluents."

(Mike Hall)

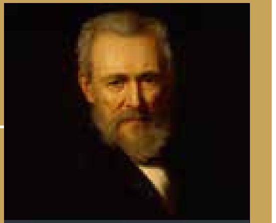
"Merchant Navy Officers under Instruction" in the Navigation Department. (Glamorgan Archives)



When the building opened, the corridor running alongside the Refectory was open to the central courtyard. (Glamorgan Archives)

Theophilus Redwood

1806-1892



Royal Pharmaceutical Society Museum

Theophilus Redwood was born on 9 April 1806 at Boverton, now in the Vale of Glamorgan. In 1820 he was apprenticed to his brother-in-law, Charles Vachell, a surgeon-apothecary in Cardiff. After three years, he moved to London to become an assistant in John Bell's pharmacy on Oxford Street. Here he met and started a life-long friendship with John Bell's eldest surviving son, Jacob Bell. Jacob Bell is known as the founder of the Pharmaceutical Society, and Redwood played a vital part in its development from the start.

He was appointed Professor of Pharmacy at the Society's School in 1842 and became director of its first chemistry laboratory on its opening in 1844. He was also the Society's first Librarian and Museum Curator. He later became Professor of Chemistry and Pharmacy. Redwood can also be credited with the first pharmacy textbook in Britain, *Practical Pharmacy* (1849), an extended and edited translation of a book by the German, Francis Mohr.

After Jacob Bell's death in 1859, he shared the editorship of the *Pharmaceutical Journal*. He edited the *British Pharmacopoeia* in 1867 and 1885. Redwood was President of the British Pharmaceutical Conference in 1876 and 1877. After his retirement in 1885, he moved back to the family home in Boverton, but still continued to lecture. His last public appearance was appropriately at the Pharmaceutical Conference in Cardiff in 1891. As he himself remarked, it was a very different Cardiff from the one he had left in 1823. He died at home on 5 March 1892 and is buried in Llantwit Major churchyard.

Redwood's students remembered his lectures as "models of lucidity." Michael Carteighe, Pharmaceutical Society President in 1892, described him as "a hard-headed Welshman...when you gave him something that it was worth while to fight...then Redwood was at his best." As well as the New Building becoming known as the Redwood Building, two redwood trees were planted at the north end of the building, and are still there today.

The layout of the building was planned vertically, as four self-contained three-storey blocks around a quadrangle. The common facilities were in the North Wing: the Students' Union and the Assembly Hall which were both large and well-equipped. According to the *Pharmaceutical Journal*, the Student Union premises "compare very favourably with those of most other college Unions." The Union had its own entrance hall and porter's lodge, two lounges (one a separate women's lounge), billiards and table tennis rooms, a small chapel, a music room, a council room and rooms for the Union officers. There was also a refectory and a "bun room." These shared areas, according to the *Pharmaceutical Journal* "ensures that the social side of the student's life is entirely collegiate – an arrangement which must surely provide the best of both worlds."

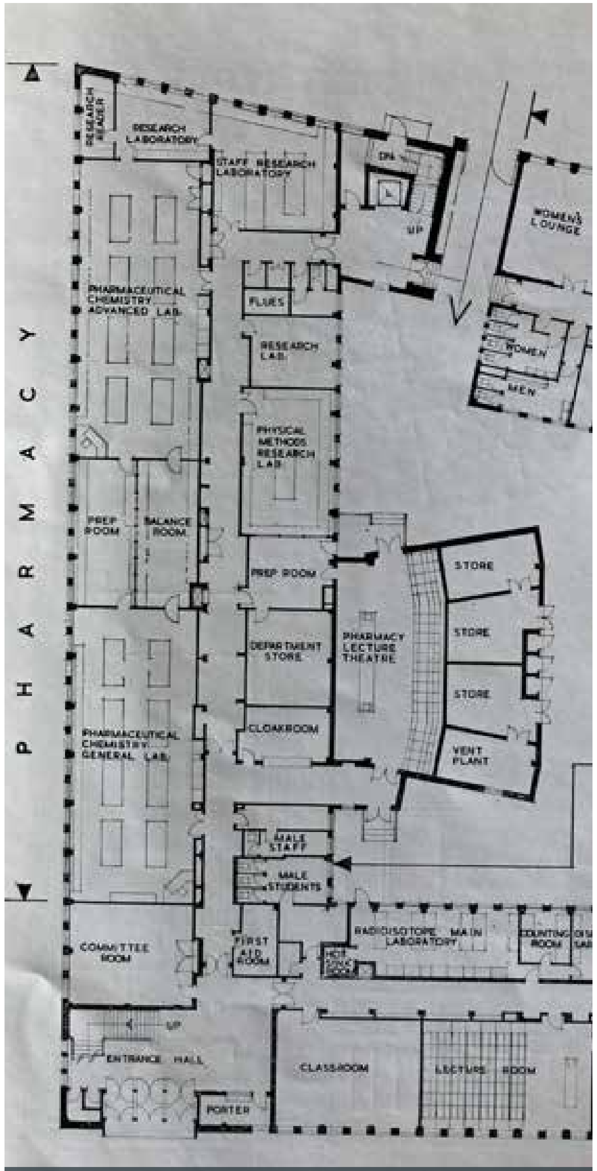
The Hall was originally over two floors, the first and second, seating 172 in the main auditorium and 112 in the balcony. There was also a stage, chair store and dressing rooms, and the facilities to broadcast for radio and television. The Hall had a separate entrance and cloakrooms in the North Wing for use outside usual hours. Of course, one of its most important functions was as an exam hall.

Pharmacy occupied the whole of the South Wing, the largest unit and the only one not to overlook a road. This Pharmacy element of the New Building cost about £250,000 to build and equip. In comparison to the Technical College (now the Bute Building) which they had just left, the facilities were palatial. The old building had eight teaching labs and lecture rooms at 4912 sq ft and two research labs at 587 sq ft. In the New Building, each main subject had a floor to itself, and because of the joint teaching with the University, time spent on the strictly pharmaceutical subjects in Redwood was only about 35 per cent of students' time.

Each laboratory in the New Building, except for Pharmacognosy, had teak-topped benches faced with African mahogany and was designed to accommodate four undergraduate students or one postgraduate student. The postgraduate benches had a filing cabinet built in. The benches had a sink at each end, eight vacuum and eight gas points and four electric points. Stools tucked beneath benches, and there was even a shelf designed for handbags! The technology labs had a special bitumastic composition floor, designed to be waterproof and flexible, and an anti-condensation surface to the walls. Mechanical equipment was planned to be stored centrally and transported to any floor with an electric hoist. Forward thinking meant that the equipment could be moved within labs on a trolley as all items were fitted to a standard mahogany board. Exceptionally large bits of apparatus were accommodated using surplus vertical service ducts to provide extra headroom, and other unused ducts were also used for fume cupboards and students' lockers.

The ground floor was for Pharmaceutical Chemistry, with two teaching labs, each to hold 32 students, separated by a prep room and an air-conditioned balance room. Automatic balances were used throughout the school to speed up weighing operations. Pharmacy students were also permitted to use the radiochemistry labs in the neighbouring Chemistry department.

The department included the Pharmacy Lecture Theatre (PLT) on the ground floor which seated 150, and had a projector and an epidiascope for projecting opaque objects including books, illustrations and specimens. An article in the *Pharmaceutical Journal* explained that, only one month after the official opening "Already it is being extensively used by outside organisations and since all tickets on such occasions must bear the words "Pharmacy lecture theatre" it is regarded as a perpetual advertisement of the very best kind for pharmacy." The lecture theatre had been equipped by cinema furnishers with tip up seats and folding writing tablets.

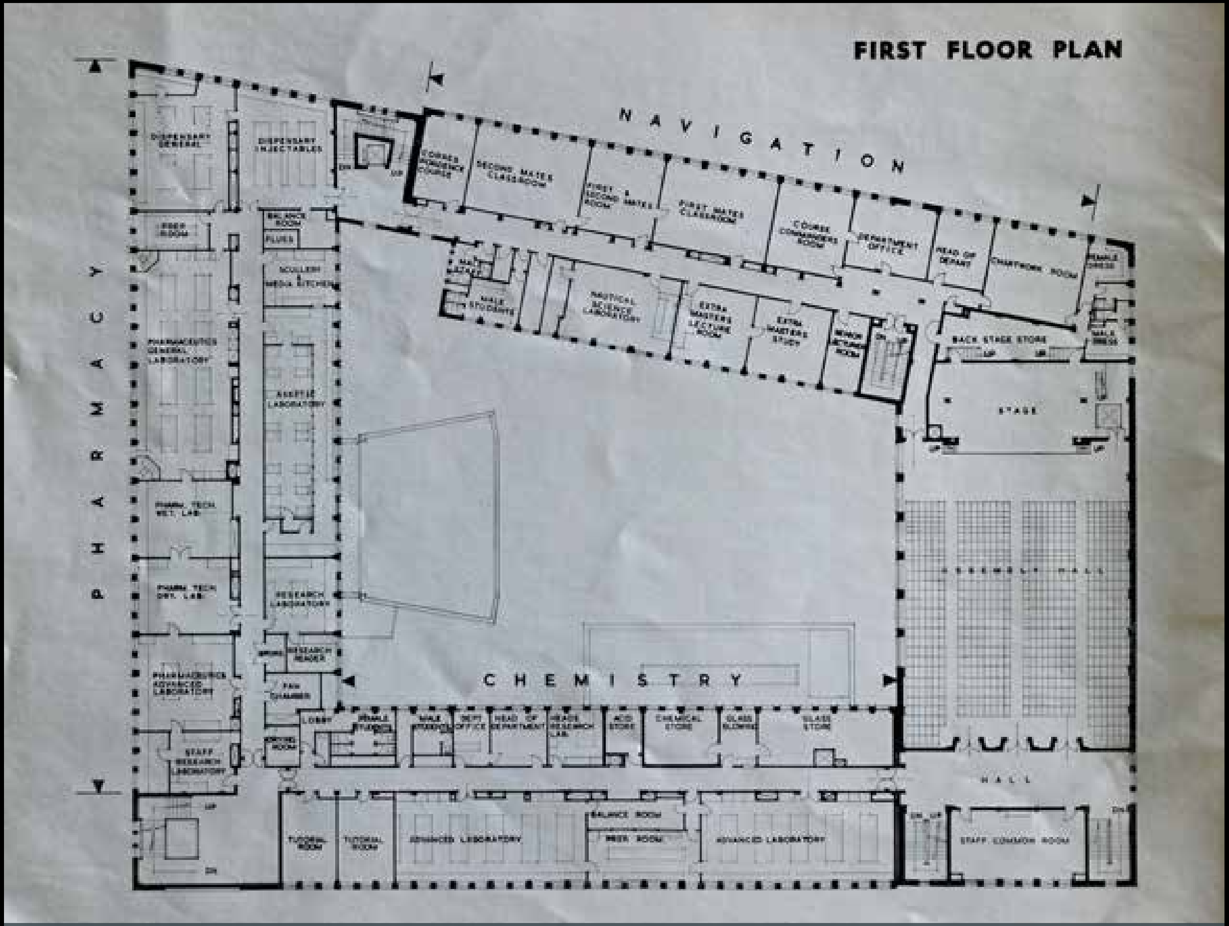


The Pharmacy Department occupied the South Wing of all 3 floors. (Glamorgan Archives)

The Pharmaceutics department was on the first floor with a logical sequence of rooms running from pharmaceutical technology, then formulation (general pharmaceutics), then general dispensing, then precision dispensing of injectables and aseptic technique. A high vacuum autoclave was modified to also act as a steam generator for the labs.

The sterile products laboratories were on the opposite side of the central corridor on the first floor. Here 16 students could work in the injectables lab on two parallel benches, one Formica topped, the other holding the autoclave and hot-air oven. The *Pharmaceutical Journal* article boasted that "the emphasis here is on precision and metric measures of Grade B accuracy are exclusively employed." The room had also been designed with steam proof light fittings and a treatment to prevent condensation. A kitchen served as the bottle-washing room, with dirty glassware delivered in colour-coded wire baskets.

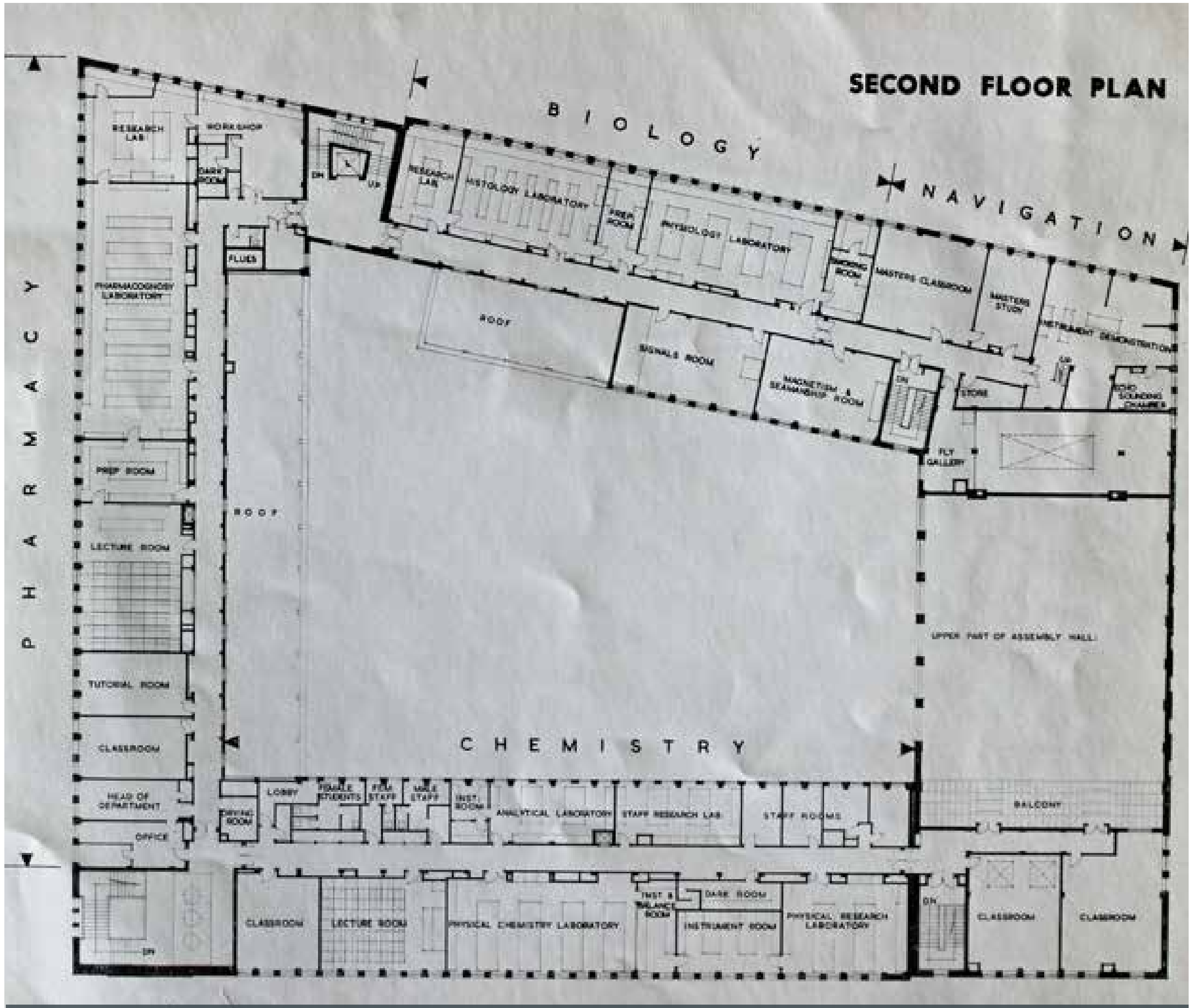
The aseptic lab suite included a washing and changing area, with knee-operated taps and hot air hand driers, the aseptic laboratory itself and a sterility testing bench. Students in this area had to wear sterile plastic caps and aprons and rubber shoes, and pass over a mat saturated with disinfectant fluid and through a double door air trap before entering. Air entered the room through bacterial filters, and the temperature and humidity were controllable. A great deal of thought had gone into planning this area in particular: the space was fully flexible with no fixed benches; all of the service controls were foot-operated; and the floor was moulded seamlessly into the walls. The aim was that the whole suite was designed and run on industrial principles.



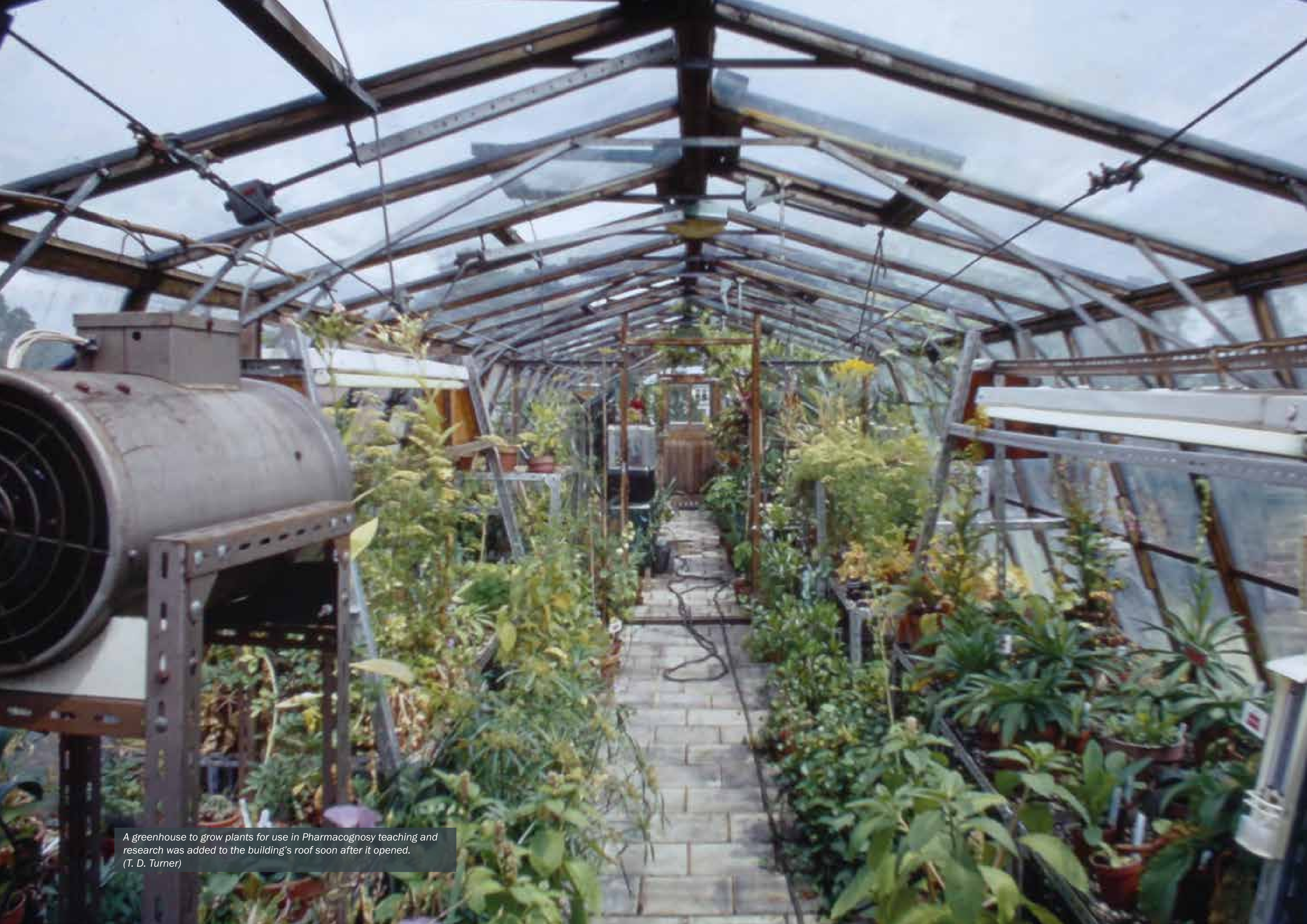
On the first floor in 1961, the Assembly Hall took up most of the North Wing. (Glamorgan Archives)

The Welsh School of Pharmacy's Pharmaceutical Technology Laboratory.
(Glamorgan Archives)

The second floor of Pharmacy's wing (South Wing) housed the Pharmacognosy and Pharmacology departments, although it opened with one side unfinished for future developments. This was first used for greenhouses to grow pharmacognosy specimens, and then filled in to become the pharmacology research labs. The departments comprised the pharmacognosy lab, applied pharmacology research lab, a class room, a tutorial room, a small lecture theatre, a workshop and the Head of Department's office. The workshop had staff members who were experts in glass-blowing and metal and wood work. As well as producing bespoke scientific glassware, the glassblower instructed local workers and taught at the Technical College. There was also a dark room and a greenhouse with automatic devices for controlling temperature, lighting and humidity. At this point, there were two main current research projects within Applied Pharmacology. The first was a study of byssinosis, a respiratory disease affecting people working with vegetable fibres such as cotton and jute, in partnership with the Pneumoconiosis Research Unit at Llandough. The second was a co-operative project with a manufacturer, a pharmacological study of the glutarimide compounds.



The second floor plan shows the unfinished section marked "roof" opposite the Pharmacognosy Laboratory. (Glamorgan Archives)



A greenhouse to grow plants for use in Pharmacognosy teaching and research was added to the building's roof soon after it opened. (T. D. Turner)

The move to the new building allowed an increase in both staff and students. When the building was opened the staffing was listed as the Head of School, University staff to teach Chemistry, Microbiology, Industry and Medical Microbiology, Physiology and Pharmacology, coupled with College staff in Physiology to teach the diploma students. Then dedicated School of Pharmacy staff listed as a Reader, Senior Lecturer, two Lecturers, and four Assistant Lecturers in Pharmaceutical Chemistry; a Reader, two Senior Lecturers, two Lecturers and four Assistant Lecturers in Pharmaceutics; a Principal Lecturer, Lecturer and Assistant Lecturer in Pharmacognosy; and a Lecturer and Visiting Lecturer in Applied Pharmacology. This was a doubling of staff numbers from the previous building, and plans were announced to increase staffing further in two stages in the following two years to reach a total of thirty by 1963.

From 1961 student intake was increased to 32 each year for the degree course and 32 for the Pharmaceutical Chemist diploma, plus a maximum of 12 postgraduates. The “sessional composite fee” for the diploma was £40 and £68 5s (£68.25) for the degree course. The aim was to reach 200 undergraduates and 36 research students within two years. This represented a doubling of the previous undergraduate totals and a six-fold increase in research places. Looking forward, there were plans for a 50 per cent increase in undergraduate students within the next few years.

Wider issues impacted on these plans for development. Promotional material for the course correctly highlighted the closer links between college and University and the benefits that this brought: “Comprehensive athletic and cultural activities are available to pharmacy students in the college and University. The School of Pharmacy now occupies a self-contained block in the new College building in Cathays Park. Overseas students can now be considered for admission to all courses.” However, accommodation issues needed to be resolved, with pressure on halls and lodgings being felt across the University and the city. University plans for expansion of residential halls meant that there was a hope that the barrier to increasing pharmacy student numbers would be resolved by 1963. The School’s ambition was that they would then discontinue the diploma course, and all pharmacy students would qualify with the BPharm degree. In both 1961 and 1962, the educational listings for the School stated: “There are no vacancies in the B.Pharm. course for next session.”

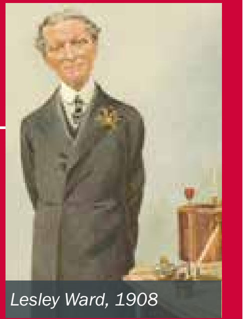
However, for the students in the New Building, the contrast with the previous facilities was stark. Brian Jones remembers “The new building was a dream after the old one. Remember the School only occupied the south wing of the building. But for our group of 17, there was ample space, especially in the labs where we each had an allocated cupboard for our laboratory equipment, mainly glassware. We were liable for breakages. The other good thing was that the lecture theatre in the Tech College was converted in to a library, giving lots of space for us to study in.”

> **“During the past few months many tributes have been paid to the Governors of the Welsh College of Advanced Technology and its Principal, Dr A Harvey. Now pharmacy must add its own. For imagination and foresight have provided Wales not only with a splendid new School of Pharmacy but with a magnificently-equipped centre for continuing education and a meeting place for Welsh pharmacists in all branches of the profession.”**
> Pharmaceutical Journal, 1961

Now known as the Redwood Building, this name was given to the building in 1979 as a tribute to the Redwood family of Boverton, Glamorgan. The most notable pharmacy member was Professor Theophilus Redwood. His son, Sir Boverton Redwood was a significant petroleum chemist, and so the family links related to both major departments in the building. Other members of the family were doctors; Theophilus’s brother Lewis and Lewis’s son Thomas. The Redwood Building name was suggested to the UWIST Secretary and Registrar by Dr J. D. R. Thomas as an appropriate association to make.

Sir Thomas Boverton Redwood

1846-1919


Lesley Ward, 1908

Thomas was the eldest of six sons and two daughters born to Theophilus Redwood and his wife Charlotte (d.1868), who was daughter of pharmaceutical industrialist Thomas Newborn Robert Morson.

Thomas studied chemistry at University College London and gained a doctorate. He then worked in his father’s laboratory at the PSGB School of Pharmacy. In 1869 he became secretary of the Petroleum Association, where he developed his expertise as an analytical chemist and began his life-long research in the area, which he later published in several volumes. He acted as an advisor on petroleum to the Home Office, to various Parliamentary Select Committees, to the City of London Corporation and other municipal authorities. He was chairman of the Gas Traction Committee, vice president of the Society of Chemical Industries, president of the Institute of Petroleum Technologists, and vice president of the Illuminating Engineering Society.

In the First World War he served as Director of Petroleum Research at the Ministry of Munitions, and on several committees relating to petrol and oil supplies, and also on the use of “liquid fire” (napalm) for trench warfare. He was knighted by King Edward VII in 1905 and was created Baronet of Marylebone Road by King George V in 1911. He was heavily involved in early cars as one of the co-founders of the Self-propelled Traffic Association in 1895, and founder of the Automobile Club (London) in 1907. He was also a keen practitioner of steam yachting.

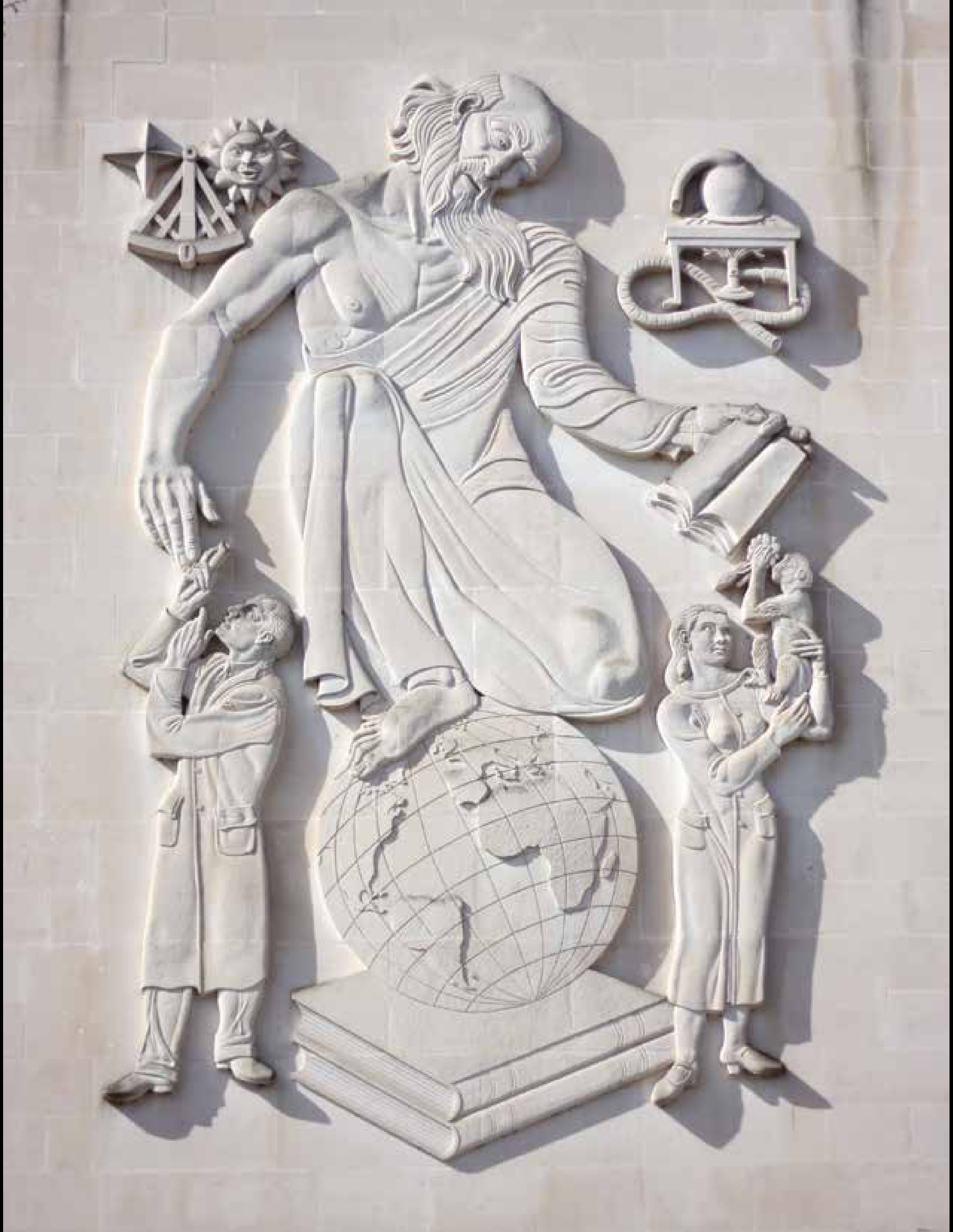
His obituary stated “The unquestioned authority of Redwood throughout the world in matters relating to petroleum was ample testimony to his marked ability and wide knowledge. He was a man of keen insight, an able administrator, and a clear expositor of any problem, however complex, with which he had to deal. Personally he was most kindly, and took a great interest in many of the younger men who became associated with him, always lending his influence to further their interests and advancement.”

The most striking feature of the New Building is the sculpture above the main entrance. It is by Edward Bainbridge Copnall (1903-1973), a South African sculptor who trained at Goldsmiths College and the Royal Academy Schools. He turned from portraits to sculpture in the mid-1920s and was commissioned to produce works for a number of significant projects including external sculpture reliefs for the Royal Institute of British Architects' new building opened in 1934, wood carvings for the Queen Mary and Queen Elizabeth liners, and panels for the Odeon cinema in Leicester Square.

Following war service as a camouflage officer, he became principal of the Sir John Cass School of Art in London in 1945, but returned to sculpture from the 1950s, particularly experimenting with fibreglass as a sculptural material. He was president of the Royal Society of British Sculptors from 1961 to 1966.

The New Building sculpture was intended to reflect the work going on inside. It shows a bearded man representing knowledge, sitting on top of a globe which in turn is balanced on two books. The figure is holding an open book, and is surrounded by figures and symbols. A sextant with sun and star indicates the School of Navigation. An alembic or distillation vessel on a stand with a bunsen burner and coiled gas pipe represents Chemistry. There is a male figure wearing a lab coat staring intently up at a test tube, to illustrate Pharmacy. The final figure is a woman holding a monkey, to show Biology.

> **"The complete absence of cornices and architraves and the rhythm of the fenestration carry the eye to the large low-relief sculpture figure over the main entrance. This sculpture, representing the figure of Knowledge teaching the students of the world, is the work of F. Bainbridge Copnall FRBS."**



CHAPTER **FIVE**

“The City of Cardiff is known throughout the world of pharmacy”

1960-1987

5

With the move to the New Building complete, the School was set for rapid development in all areas: the number of dedicated pharmacy staff immediately doubled to 22; the annual intake of undergraduate students increased to 32 undergraduates and 32 diploma students in each year, up from around 24 undergraduates and eight diploma students in the previous building; the ability to focus on research with good facilities intensified; and social activities flourished.

> **"It must not be forgotten that it is a Welsh school of pharmacy and one feels that the Welsh nation's insatiable appetite for knowledge and its now traditional concern for all educational matters have played a large part in the financing of the development and improvement."** T. D. Turner, 1965

The School's parent body, the Welsh College of Advanced Technology, was also ripe for development within a national context that was encouraging of advanced technological skills and vocational training. By 1963, there were ten Colleges of Advanced Technology (CATs) in England and Wales, with the one in Cardiff intended to serve the whole principality. In the same year, the Robbins Report, arising from a government commissioned review of higher education by a committee chaired by Lord Robbins, led to the creation of new technological universities nationwide.

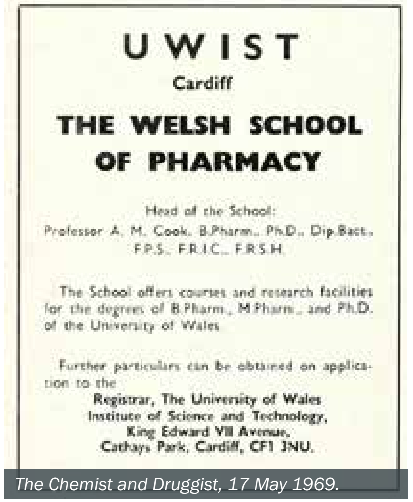
In the annual course listings in the *Pharmaceutical Journal* in July 1964, the Cardiff entry stated "It is expected that the Welsh College of Advanced Technology will develop in the near future into an independent Technological University. Diploma courses would then cease to be offered, and arrangements would be made to transfer students attending such courses to corresponding degree courses of the new university."

The following year, a resolution was passed by the Guild of Graduates of the University of Wales that the Welsh CAT should become a constituent College of the University, rather than creating a new technological university for Wales. The *Times Educational Supplement* reported that the Welsh situation "has its own logic." The relationship between the CAT and the Welsh National School of Medicine, still a separate body, would need to be resolved – particularly important for the Pharmacy School – but this would be worked out within the University of Wales framework. As well as being Head of the Pharmacy School, R. Vernon Lloyd was appointed Vice Principal of the CAT.

Of course, the School had an existing long-term relationship since 1937 with the University via its BPharm (Wales). From 1967, the availability of a pharmacy degree across the UK meant that it could become a graduate-only profession. To register as a pharmacist with the Pharmaceutical Society, each person had to hold a pharmacy degree from a PSGB-approved course, and to complete a satisfactory period of pre-registration experience.

In 1967 the Welsh CAT was given full University status, formalised in November 1967 with the granting of a supplemental charter to the University of Wales and a charter to the former Welsh CAT by the Queen, to incorporate it as a constituent College of the University with the title of University of Wales Institute of Science and Technology (UWIST). Pharmacy was one of its 16 constituent departments, alongside others including English and Liberal Studies, Architecture, Business and Social Studies, Maths, Applied Biology, Applied Physics, Chemistry, Civil Engineering and Building Technology, Mechanical and Production Engineering, and Maritime Studies. They were organised into six schools: Architecture and Environment, Arts and Social Sciences, Chemical and Biological Sciences, Engineering, Pharmacy, and Physical and Mathematical Sciences. Pharmacy was therefore UWIST's only single department school.

But by 1971, the University Senate had dissolved the School of Studies in Pharmacy, creating instead a School of Health and Life Science with departments of Pharmacy, Ophthalmic Optics, and Applied Psychology. It was planned that professors from within the School would serve as Dean in rotation in order also to allow time for their specialism, although in reality that system never fully came into being.



UWIST

Cardiff

THE WELSH SCHOOL
OF PHARMACY

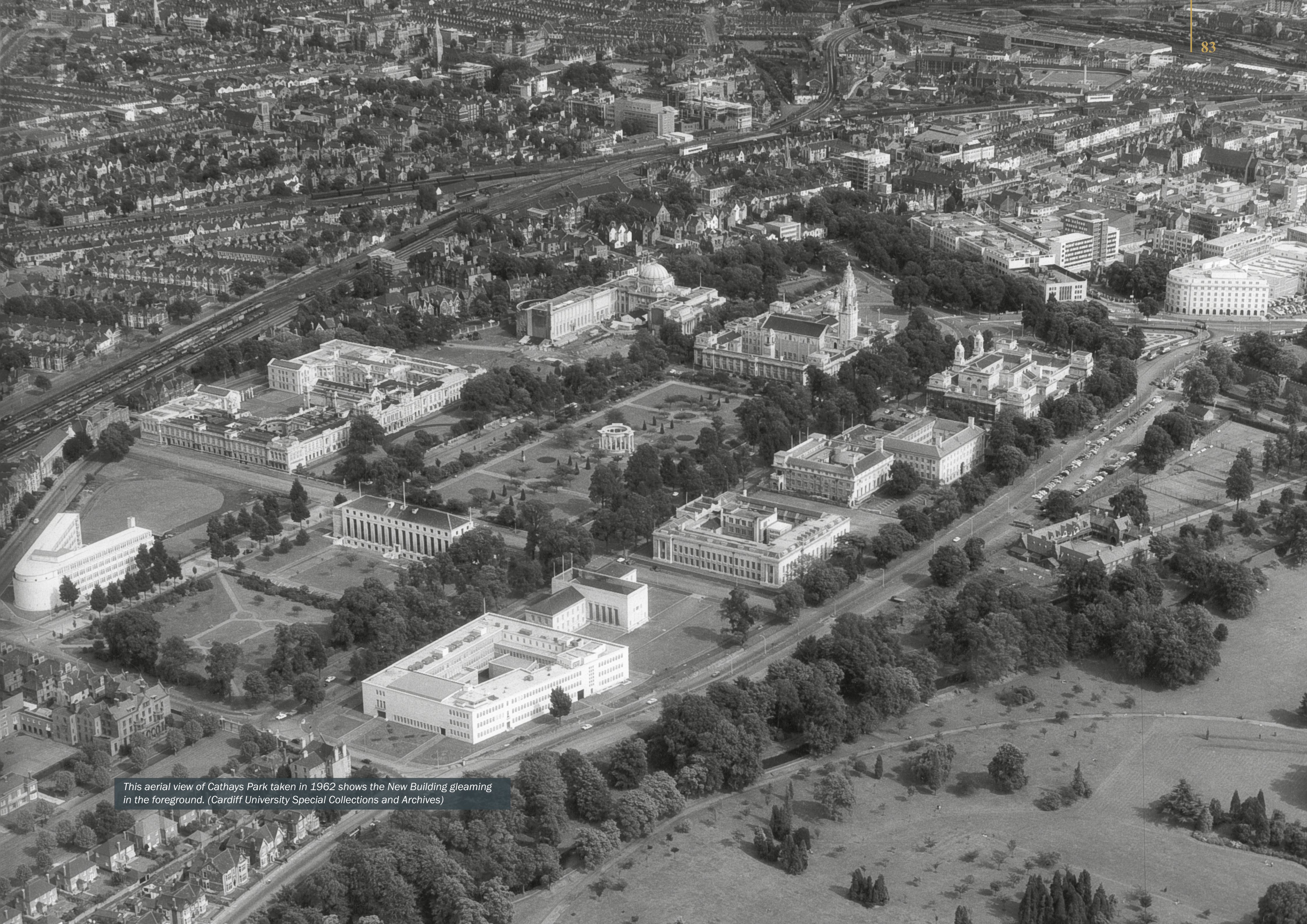
Head of the School:
Professor A. M. Cook, B.Pharm., Ph.D., Dip.Bact.,
F.P.S., F.R.I.C., F.R.S.H.

The School offers courses and research facilities for the degrees of B.Pharm., M.Pharm., and Ph.D. of the University of Wales

Further particulars can be obtained on application to the

Registrar, The University of Wales
Institute of Science and Technology,
King Edward VII Avenue,
Cathays Park, Cardiff, CF1 3NU.

The Chemist and Druggist, 17 May 1969.



This aerial view of Cathays Park taken in 1962 shows the New Building gleaming in the foreground. (Cardiff University Special Collections and Archives)

Archie Cook

Adrian M. ("Archie") Cook qualified at the London School of Pharmacy ("The Square") in 1938. He was one of the students evacuated to Cardiff in 1939, and then served in the RAF for six years during the War. He returned to the London School ultimately as Professor of Pharmaceutics until his move to the Welsh School as Professor of Pharmacy and Head of School in 1967. In 1971, he was Dean Designate of UWIST's new School of Health and Life Science, alongside his headship of the Pharmacy department. He retired in 1978 due to ill health.

He served on a significant number of committees. In 1973, he was elected Chair of the Council of the Royal Society of Health, the first pharmacist to hold the position. He had previously chaired its pharmaceutical subjects group. He was a member of the PSGB Education committee, the Advisory Committee of the South Bank Polytechnic, the Chairman of the British Section of the Franco-British Pharmaceutical Commission, and Vice President of the Association for the Prevention of Addiction.

In 1968, he was elected Chairman of Rhanbarth de Cymru, the PSGB's new Welsh Committee. He was also an external examiner for the Schools of Pharmacy in Strathclyde, Nottingham and Ife in Nigeria.

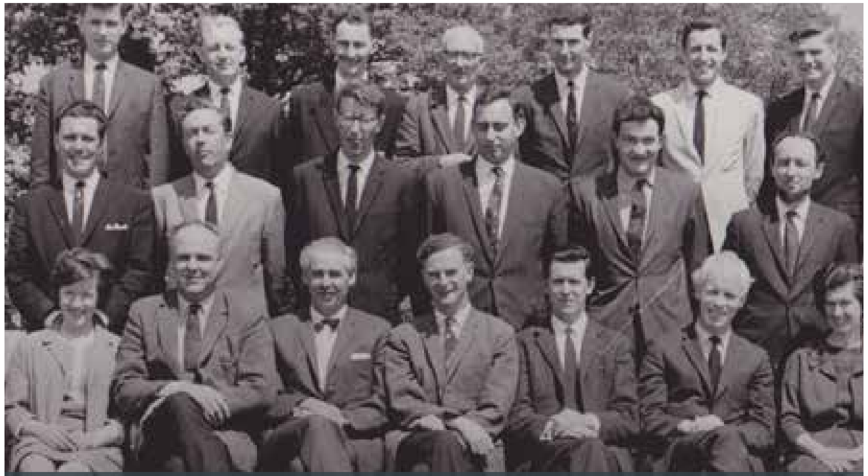
Staff

1967 was a very significant year. Not only was it the birth of UWIST, but also the end of Rees Vernon Lloyd's time at the School with his retirement on 30 June 1967. He was presented with a small album including a formal photograph of the staff, as well as their signatures, current WPSA members, a number of alumni and other well-wishers. He was also presented with a framed portrait painted by Ivor Williams, a Cardiff-based artist, funded with donations from colleagues, past and present students. Although Vernon Lloyd was also given the balance of the fund, he presented it to WPSA to form "a nucleus emergency fund to assist pharmacy students". For many years his portrait hung at the top of the main stairs in the Redwood Building, a building which he himself planned in great detail as Vice-Principal of the College. In 2010, it was moved to a new position in the newly-renamed Vernon Lloyd Lecture Theatre on the ground floor.

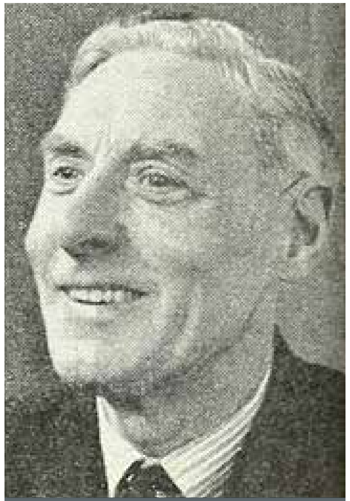
In his remarkably prescient retirement speech, Vernon Lloyd commented that the School's new building "was already too small." He recommended the merger of the two University Colleges in Cardiff (which finally happened in 1988), forecast the merger with the Medical School (which occurred in 2004), and hoped that the Pharmacy School would expand to occupy the whole of the Redwood Building, which effectively occurred in 2008.

Professor A. M. (Archie) Cook was appointed Professor of Pharmacy and Head of the Welsh School of Pharmacy in 1967, having previously held a personal chair in Pharmaceutics in the School of Pharmacy in London. He had graduated from London during the war years, and had strong links with Cardiff, having been one of the students evacuated to University College in 1939.

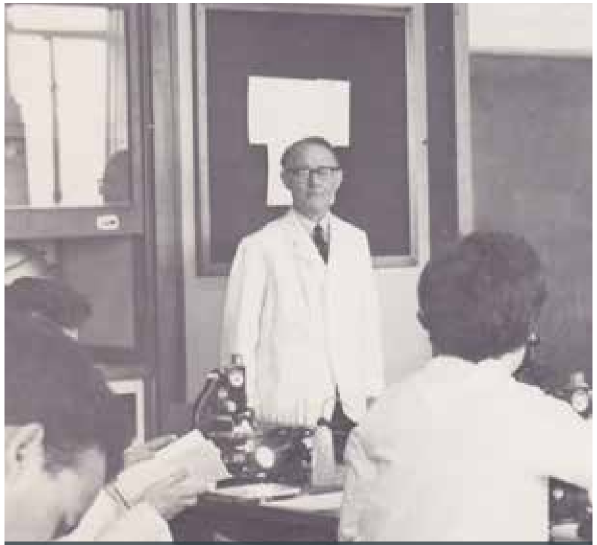
In some respects, Vernon Lloyd's retirement marked the final changing of the old guard. A cocktail party on 15 June 1962 had marked the retirement of Llewellyn Loveday Jones, Senior Lecturer, after more than 35 years at the School, having joined the staff in 1927. He had qualified at Brighton in the post-First World War generation and had been responsible for teaching Dispensing, Aseptic Technique and Forensic Pharmacy in Cardiff. As well as the cocktail party, a dinner was held the following day, attended by 145 past students "from all over the British Isles to say farewell to their old teacher." Ivor Harrison, president of the Past Students' Association presented him with an electric razor and a cheque.



Staff photograph taken for Vernon Lloyd's retirement in June 1967.
Back row: Ifor Thomas, Geof Toms, Denver Russell, Pat Cleary, David Ringshaw, David Robins, Hugh Deeks.
Middle row: David Bailey, Hywel Williams, Tony Armstrong, Mike Barnett, Mike Barr, Paul Nicholls
Front row: Sue Wightman, Ken James, Jack Ingram, Vernon Askam, John Smith, Terry Turner, Margaret Rees. Ivor Harrison was missing from the photograph.



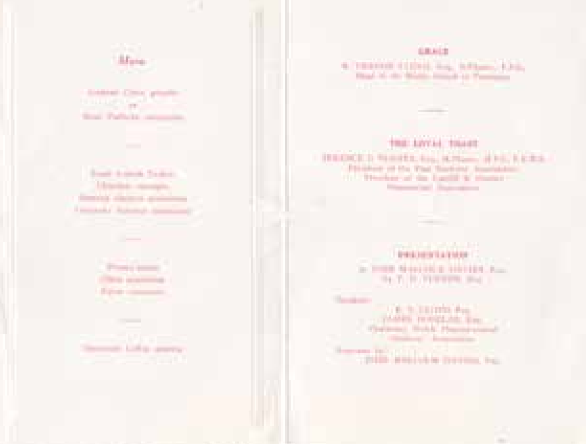
This photo of Llewellyn Loveday Jones accompanied the announcement of his retirement in The Chemist and Druggist in 1962.



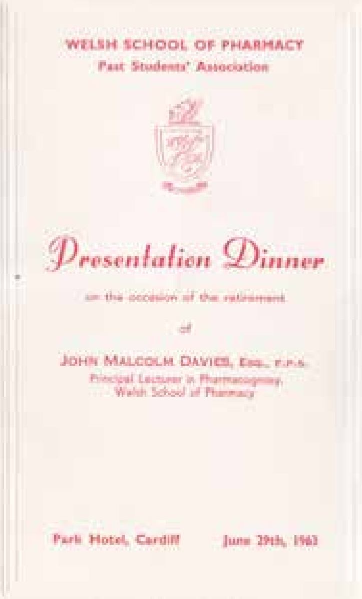
J. Malcolm Davies in the Pharmacognosy laboratory, shortly before his retirement in 1963. (Chemist + Druggist.)

The following summer, another longstanding member of staff, J. Malcolm Davies, retired, having taught Pharmacognosy at the School since 1926.

In the new building, within a new organisation, the School geared up to embrace new subject areas and new challenges. In 1960, Paul Nicholls had joined the staff as the School's first pharmacologist, later to become Professor of Biochemical Pharmacology. Prior to this Pharmacology had been taught by George Mitchell from the Medical School, who continued as a Visiting Lecturer. The School also had Visiting Lecturers in Pharmaceutics: E. T. Griffiths, Chief Pharmacist at Cardiff Royal Infirmary and H. Giboor, Chief Pharmacist at the Royal Gwent Hospital.



The menu for J. Malcolm Davies's retirement dinner on 29 June 1963 was a magnificent tribute to his phytopharmacy background, giving botanical names for all of the fruit, vegetables and even the coffee.



WELSH SCHOOL OF PHARMACY
Past Students' Association

Presentation Dinner

on the occasion of the retirement

of

JOHN MALCOLM DAVIES, ESQ., F.P.S.
Principal Lecturer in Pharmacognosy,
Welsh School of Pharmacy

Park Hotel, Cardiff June 29th, 1963

Paul Nicholls
1934-2018

(Cardiff University Special Collections and Archives)

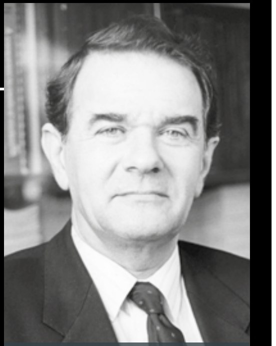
Paul Nicholls graduated with a Biochemistry degree from the University of Birmingham in 1956, and returned to his native Cardiff to undertake a PhD in Pharmacology at the School. He joined the School's staff in 1960, becoming Senior Lecturer in 1969, Reader in Pharmacology and Head of the School's Pharmacology Department in 1979, and being granted a personal chair in Biochemical Pharmacology in 1990. He was Deputy Head of the School from 1997 until his retirement in 2002, after 42 years on the staff. He also chaired the Board of Studies in Pharmacy, and was an external examiner for a number of other schools.

His research interests included drug metabolism, plasma drug monitoring, bioavailability and the formulation of steroids, and drug analysis. He published over 400 research papers and supervised nearly 100 PhD students. He was a member of the British Pharmacological Society, the Biochemical Society, the British Toxicology Society, the British Association for Cancer Research, and the British Association for Lung Research.

He was a regular contributor to the British Pharmaceutical Conference, and a founder committee member, later Vice-Chair and Chairman of the PSGB Academic Pharmacy Group. He was well-known as a great advocate for pharmacy, speaking frequently to PSGB branches, on courses and postgraduate workshops, as well as to schools. He was made an Honorary Member of the Royal Pharmaceutical Society in 1992.

Paul Spencer

1934-2012



(Cardiff University Special Collections and Archives)

Paul Spencer graduated from Leicester Technical College in 1957 and qualified as a pharmacist in 1958 after pre-registration training at the Middlesex Hospital. He taught at the University of London School of Pharmacy from 1959 to 1962 while studying for his PhD, and then moved to Allen and Hanburys as a research pharmacologist. In 1965, he returned to academia as Senior Lecturer, then Reader in Pharmacology at the new University of Aston. He joined the School in 1971 as Professor of Applied Pharmacology, and became Head of School in October 1978, holding the post until 1997. He was Pro-Vice-Chancellor from 1994 to 1998, and retired in 2002.

In 1972, he was elected as a Fellow of the Institute of Biology, and in 1978 he was designated a Fellow of the Pharmaceutical Society. He was a member of organisations and committees including the British Pharmacological Society, the British Association for Psychopharmacology, the Medicines Commission, the UK Heads of Schools of Pharmacy Committee, and the Standing Advisory Committee for England and Wales. He served as external examiner for higher degrees for Strathclyde and Nottingham Schools of Pharmacy. He also served as Chair of the General Pharmaceutical Committee for Wales in 1984.

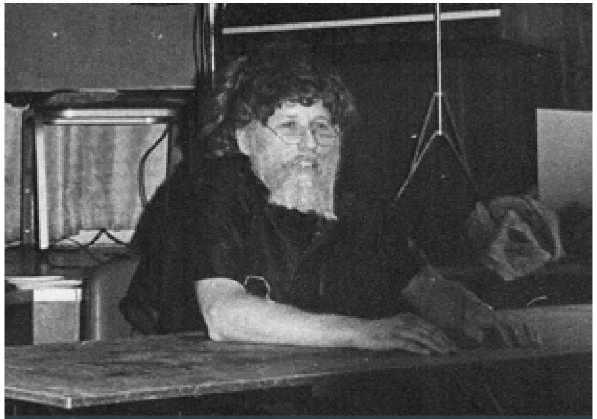
His research focussed on psycho-neuropharmacology of anxiolytics, antidepressants and analgesics. He was also interested in the induction and detection of physical dependence in opioids, and evaluation of anti-neurodegenerative drugs. He was Editor in Chief of the *Journal of Pharmacological and Toxicological Methods*.

Professor Spencer was awarded the higher doctorate of DSc in the University of Wales in 1986, an honorary DSc from De Montfort University in 1994, and the OBE in the 1994 New Years Honours.

In 1968, a second Chair in Applied Pharmacology was established, with Dr G. B. West initially appointed, although he unfortunately had to withdraw for personal reasons. Dr Paul S. J. Spencer was appointed to the post in 1970, moving from his role as Reader in Pharmacology at Aston School of Pharmacy. He was responsible for both undergraduate and postgraduate teaching, but also for building up the School's research in this area.

An additional lecturer in Applied Pharmacology was also appointed, with Dr K. Broadley and Dr N. S. Doggett taking up the two lectureships in this area. Although the University College Biochemistry and Physiology staff still provided teaching to the School, and agreement was reached for an extra lecturer in each subject to enable this to continue, the Pharmacy department's 1968 annual report stated that the School Committee were considering "the academic suitability of this arrangement."

In 1969, Keith Brain joined as Lecturer in Pharmacognosy, and in 1971, Mr P. J. Cleary, Chief Technician, retired after 46 years in the department. In the same year, Professor A. M. Cook was elected as Dean Designate of UWIST's new School of Health and Life Science, alongside his headship of the Pharmacy department.



Keith Brain taking a full part in the WPSA ball entertainment in 1974. (Dr Chris Wainwright)

In 1976, with the appointment of Peter Parish as the first Professor of Clinical Pharmacy in the United Kingdom, the School was leading the way into a new field. His research in areas such as the teaching of Pharmacology, and his focus on the role of pharmacists in the therapeutic team, was a key concern across the profession at this time. "Clinical pharmacy" had emerged in the United States in the 1960s emphasising a role for pharmacists in promoting safe and effective use of medicines, and the importance of patient-focused undergraduate teaching. Traditionally, pharmacy education in the UK was more scientific.

Sian Jones and Mandana Abidi making granules in the Pharmaceutics lab, 1974. (Dr Chris Wainwright)

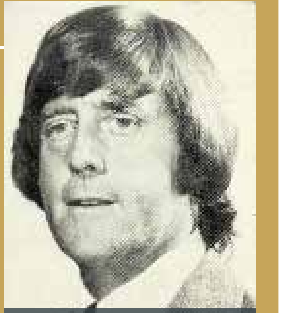
A student audience in the lecture theatre in the early 1980s.

It was announced in July 1978 that Professor Cook would be retiring due to ill health. Professor Paul Spencer would take over from 1 October 1978 as Head of School .

In 1979, Dr Ian Kellaway was appointed Professor of Pharmaceutics. Having graduated from the University of London School of Pharmacy in 1965, and continued with his PhD there, he had worked at Leicester and Nottingham Schools of Pharmacy, before taking up his post in Cardiff.

Entering the 1980s, the School had three established Chairs in Pharmacology, Pharmaceutics and Clinical Pharmacy, with staff expertise firmly brought in-house in contrast to the earlier days of sharing teaching with the School of Medicine and other University departments. However, the School was not immune from national pressure on University funding and the subsequent contraction of staff numbers across the UK from 1981 onwards. The School suffered a fall in academic staff from 28 to 19, although some fixed-term and short-term appointments were possible with research funding. Nevertheless, the School added a new Chair in Pharmaceutical Chemistry in 1985, with Dr Jonathan Hadgraft appointed. Having graduated in Chemistry from University College, Oxford in 1973, he had taught at the University of London, Strathclyde and Nottingham Schools of Pharmacy, before moving to Cardiff. His main research was in the application of physical chemistry to pharmaceutical problems, especially percutaneous absorption, and he had been awarded the British Pharmaceutical Conference science award in 1984.

Peter Parish



Chemist + Druggist

Dr Peter A. Parish was appointed Professor of Clinical Pharmacy at the School in October 1976, the first chair in this subject in the UK. Having qualified in medicine, he practised as a GP before being appointed as Senior Medical Research Fellow at the Medical Sociology Research Centre, University College Swansea in 1972. He also spent a year as Visiting Professor in Social Pharmacology at the University of Minnesota in 1975-76. He established the School's Medicines Research Unit in the 1980s, promoting multidisciplinary research and education into the appropriate, safe and economic use of medicines. He served as Dean of UWIST's School of Health and Life Sciences in the early 1980s and became Emeritus Professor of Clinical Pharmacy on his retirement.

Professor Parish served on the Action and Uses Revision Committee of the *British Pharmaceutical Codex* from 1968 to 1973, and wrote and lectured widely on the factors that influenced medicines prescribing. He was the author of *Medicines – a guide for everyone*, published in 1976 for a general public readership.

The courses

Although the move into the New Building increased the School's capacity significantly, the annual listing of pharmacy courses in *The Chemist and Druggist* in 1961 showed that the School had no vacancies for either the PSGB Qualifying Exam or the BPharm degree course. A year later, there were still no vacancies for the degree, but immediate enrolment was available for the Qualifying Exam, a sign of the times with interest nationally in this diploma waning, in favour of the all-graduate pharmacy profession.

A UK-wide analysis of pharmacy students prepared for the PSGB Council in 1962 quantifies the situation. In Cardiff, there were 57 British male students, 61 British female students and 9 students from overseas, totalling 127 (compared with 1,954 students nationally comprising 1,102 British male, 687 British female and 165 overseas students). At the Welsh School, 31 were in the first year of the degree course, 28 in the 2nd year, and 26 in Year 3. The Pharmaceutical Chemist course comprised twenty students in the first year, 12 in the 2nd year, and 10 in the 3rd year. The School no longer taught the two year Pharmaceutical Chemist diploma: there were only 31 people left in the UK who were studying under that scheme.

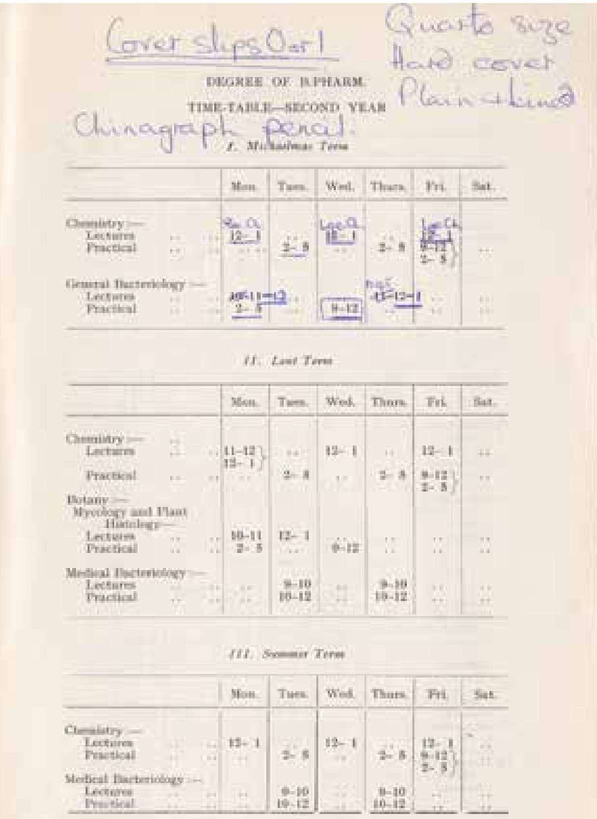
In the 1960s, the gender mix in each cohort seems to have been fairly even. Typically about half of the year was Welsh including a number from Cardiff each year who lived at home, at least at the start of their courses. The majority of the rest were from England, but also included international students from South Africa and even from Libya. One 1960s student felt that Pharmacy students were a socially and educationally diverse group, from city, town and country, and from school leavers to more mature.

In 1963 in Cardiff, the annual fees were £82 7 shillings (£82.35) for the degree course and £65 for the diploma, plus laboratory fees for the use of apparatus and materials charged by subject, a Student Union fee, a library deposit of £2 payable in the first year and returned at the end of the final year, and a laboratory deposit required for Chemistry and Bacteriology. The fees for the BPharm's first two years were payable to University College Cardiff. At the end of either course, to achieve membership of the PSGB, you had to do a one year pupillage, which was supervised practical experience in either hospital, community or industrial pharmacy, the precursor to the current pre-reg year.

BPharm graduation group, in front of City Hall, 21 July 1961. (Brian Jones)

A surviving prospectus for 1963 gives an outline for the courses. The BPharm Year One comprised of intermediate courses in Biology (or Botany and Zoology), Chemistry and Physics. Candidates with A-level Chemistry, Physics and either Biology or Botany and Zoology could go straight into the second year. Year Two, known as Final Part I, consisted of Chemistry (organic, inorganic and physical), Microbiology, Plant Histology, Medical Bacteriology, and Pharmaceutics. Microbiology and Pharmaceutics were new replacements for General Bacteriology and Mycology which were dropped in the early 1960s. Years Three and Four, known as Final Part II, had a Pharmaceutical Chemistry course running across both years, alongside Physiology & Biochemistry, and Pharmacology and Pharmaceutics, the latter two having been just Year Four subjects until 1962. Pharmacognosy was taught in Year Three. There was also a practical and oral Dispensing exam. Teaching took place at University College for Physiology, Biochemistry and Basic Microbiology, and the Welsh National School of Medicine for Pharmacology.

Mike Allwood, later Professor of Pharmacy at the University of Derby, was a Cardiff BPharm student starting in 1962. He recalls: "I was offered a place at the last minute to study pharmacy but I needed to pass an internal course in Physics first as I failed it at A level (you might be offered such opportunities in those days!). I was admitted as a UCC [University College Cardiff] student, where I studied for the first year. I moved to the Welsh School of Pharmacy in the Redwood Building in 1962 to start my pharmacy degree proper…We studied a lot of science, a real grind at the time, and much time was also spent with Pharmaceutical Technology. Extemporaneous dispensing and pharmaceutical formulation classes were also major parts of the course. This has all stood me in very good stead."



Cover slips 0 or 1

Quarto size
Hard cover
Plain + lined

DEGREE OF B.PHARM.

TIME-TABLE—SECOND YEAR

Chinagraph pencil

I. Michaelmas Term

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Chemistry—						
Lectures	12–1	..	12–1	..	12–1	..
Practical	..	2–5	..	2–5	9–12 2–5	..
General Bacteriology—						
Lectures	10–11	..	..	12–1	..	..
Practical	2–5	..	9–12	..	..	..

II. Lent Term

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Chemistry—						
Lectures	11–12 12–1	..	12–1	..	12–1	..
Practical	..	2–5	..	2–5	9–12 2–5	..
Botany—						
Mycology and Plant Histology—						
Lectures	10–11	12–1	..	..	..	..
Practical	2–5	..	9–12	..	..	..
Medical Bacteriology—						
Lectures	..	9–10	..	9–10	..	..
Practical	..	10–12	..	10–12	..	..

III. Summer Term

	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Chemistry—						
Lectures	12–1	..	12–1	..	12–1	..
Practical	..	2–5	..	2–5	9–12 2–5	..
Medical Bacteriology—						
Lectures	..	9–10	..	9–10	..	..
Practical	..	10–12	..	10–12	..	..

Joan Hutchinson (now Mawson) annotated her first year timetable in the BPharm Prospectus, 1961- 62. (Joan Mawson)

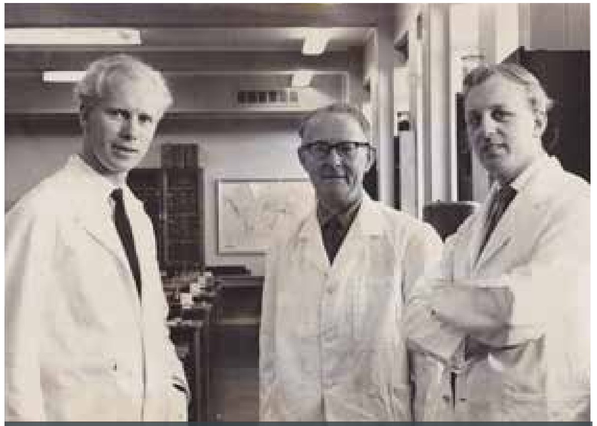
For those students taking the intermediate course in their first year, lectures were alongside pure science, optical and pre-clinical medical students, so pharmacy students made friends with students of other disciplines. One alumnus recalled a very painful experience being a guinea pig for contact lenses for an optical student. More worryingly, another remembers drinking his practical partner's dose of methenamine powder and ending up in the University Hall sick bay because her calculations were incorrect by a factor of ten.

Mike Mitchell (BPharm 1965-68) described the School's students as a "nomadic tribe" having to walk between so many venues. Roger Pickett in the same year recalls "unspeakable samples and the smell of agar" at the Cardiff Royal Infirmary where they were taught Bacteriology and Medical Microbiology, the smell of varnish in the basement at The Parade for Pharmacology, the reluctance of the women students to pith their frogs at Newport Road for Physiology, spitting into test-tubes in St Andrews Place for Biochemistry, the "Black Box" behind the National Museum for Practical Chemistry, the Main College for Chemistry lectures and Microbiology, and the School of Pharmacy for Pharmacognosy, Pharmaceutics, Pharmaceutical Chemistry and Forensic Pharmacy. Students were only allocated a locker at the School, and so had to carry their lab coats and books between the other venues, which was obviously problematic in the rain.

A group of fourth year BPharm students, June 1965. (Joan Mawson)

> **"The unusual relationship between the University departments and the school of pharmacy has had a salutary effect on the students. Their contact with staff and students of the other departments has produced a wider spectrum of academic and social activities, and resulted in some degree of liberalisation. The specialisation of the school in the "pharmacy" subjects has gained recognition for the department as the national centre of pharmaceutical education in Wales."** T. D. Turner, 1965

Until metric measurements became the sole pharmaceutical standard units in 1963, students had to have knowledge of three systems of weights and measures: apothecary weights (grains, scruples, drachms and ounces, minims and fluid ounces), metric weights and measures, and the Avoirdupois ounce system. The 5ml spoon had not yet been introduced for liquid measures, so teaspoonfuls and tablespoonfuls were the standard doses. Mike Mitchell remembers making various formulations from basic ingredients in Pharmaceutics practicals: "making mixtures, lotions and suspensions was straight forward, creams, ointments and powders a little more difficult whilst we had difficulties with emulsions which cracked, pessaries and suppositories that did not set or ended up with coloured tips." Students were also taught to wrap dispensed medicines in demi-paper and seal with sealing wax, while all labels for dispensed medicines were hand-written without the name of the preparation for the patient. Other alumni's vivid memories were of Terry Turner "encouraging" students to taste cinchona bark, thin-layer chromatography of plant extracts in his Pharmacognosy classes, or Ivor Harrison's ability to make Forensic Pharmacy lectures interesting.



Terry Turner, J. Malcolm Davies and Geof Toms pictured in the Pharmacognosy Lab, early 1960s.

Pharmaceutical Chemist diploma students were mainly taught separately. Year One comprised Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy and Physiology, with Year Two offering more advanced classes in the same subjects. Year Three covered Pharmaceutics, Pharmaceutical Chemistry, and Pharmacology. There seemed to be little animosity between the degree and diploma students, but alumni suggest perhaps a sense of friendly rivalry and maybe a little superiority amongst some of the degree students. One past student remembers that PhC and degree students worked next to each other in the first year Chemistry practical class, "much of which was a mystery to us, and so it seemed to the demonstrators also - who were little help!"

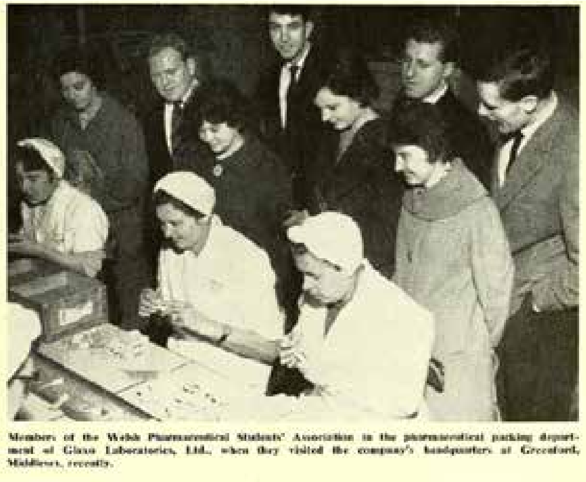
More than one alumnus remembers the constant stress of keeping up with the course, not helped by the fact that there were very few free periods and lots of practicals. The hours were 9am to 5pm on every week day except Wednesday when teaching ended at 1pm to accommodate University sports activities. A Saturday morning class was also introduced in one year. Lab notes needed to be written up in the evenings.

Both the degree and diploma courses also included Works Visits: two series of factory visits in and around London, three days at Christmas and three days at Easter. The prospectus confirmed that attendance was compulsory and must be paid for by the students, although in fact there were Local Authority grants available. Reports of some of these visits appeared in the pharmaceutical press, and there are fond memories, such as a combined week's trip to Manchester and Liverpool in 1964, ostensibly to visit Dista, Evans Medical, Geigy and ICI, but also with a great deal of socialising including travelling back and forth on the Mersey Ferry – completely in tune with Gerry and the Pacemaker's hit of the time.

In 1968, within the new UWIST set-up, the Bachelor of Pharmacy Degree with Honours was introduced to replace the BPharm degree and PSGB Diploma taught side by side. The new degree allowed for specialisation in the final year for the first time. With this change, the School assumed responsibility for all BPharm teaching instead of some courses in the Medical School and certain departments of University College. Administration of the degree was transferred from the Board of Studies in Pharmacy in University College Cardiff to UWIST's School Committee for Pharmacy. The Pharmaceutical Chemist Diploma would be phased out, with the final exam sittings for its Part III held in 1970 for the five remaining PhC students. (In reality, two students took their final exams in 1971).The BPharm under the old regulations would be taught until all students who had started the course had sat the final exams during the 1969-70 academic year. There were still 28 students in the 3rd year under the old regulations, and 27 in its fourth year. With all of these interim arrangements in place, Pharmacy had 112 students out of a total UWIST population of 1,612 students in the 1968-9 academic year.

On the Mersey Ferry, January 1964. (Joan Mawson)

A Works Visit to Glaxo's Greenford factory in the early 1960s, including Terry Turner, Alan Crabbe, Peter Jenkins and Jack Ingram.



Members of the Welsh Pharmaceutical Students' Association in the pharmaceutical packing department of Glaxo Laboratories, Ltd., when they visited the company's headquarters at Greenford, Middlesex, recently.

The Chemist and Druggist 13 February 1960. (Chemist + Druggist)

The Chemist and Druggist 4 January 1964. (Chemist + Druggist)

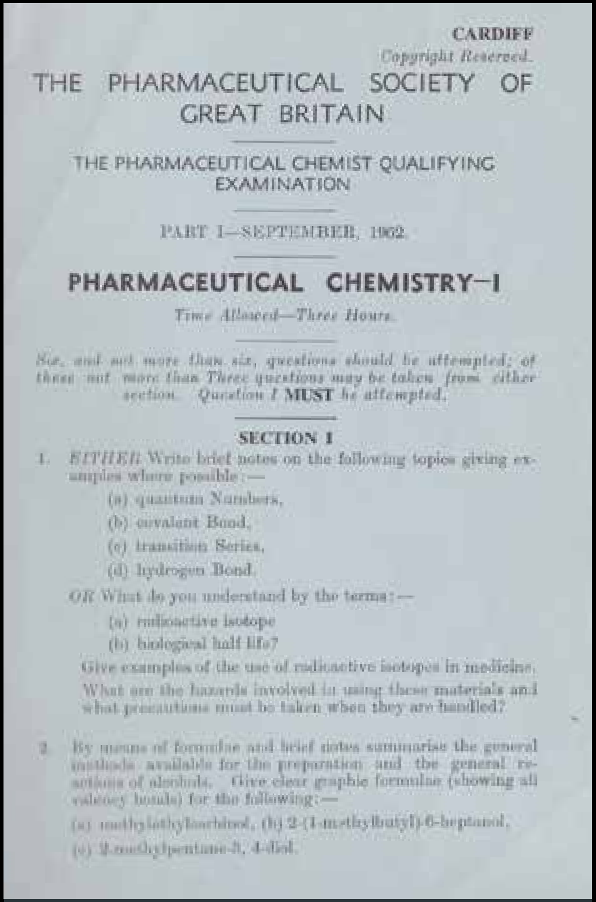
When students visited Parke Davis, they had an official photograph taken, like this one from 1961.

However, the transfer of the Department of Pharmacology from the Welsh National School of Medicine was challenging. A meeting between UWIST and the Medical School described it as “impossible to make suitable arrangements” and Senate agreed a gradual transfer of Pharmacology teaching, which led to it finally being taught to pharmacy students wholly within the Pharmacy School in 1970. Although this uncertainty had impacted on the School’s numbers, with a restricted intake of 34 first year students in 1968 because the capacity of teaching accommodation for Pharmacology was unconfirmed, a PSGB inspection in the same year recommended that a large increase in the undergraduate intake should be considered by the School.

Paul Cooke, an undergraduate from 1969 to 1972 recalls the intensity of the courses: “I do remember there being a very full timetable with many half day practical sessions. This was in contrast to undergraduates on other courses - I shared a flat with undergraduates in law, economics, and civil engineering, all of whom had a much lighter timetable, although they did seem to have far more essay work as well as preparation for tutorial sessions to be completed in their own time.”

The demand for places at the School was substantial. The Universities Central Council on Admissions (UCCA) applications in 1967-68 were 177 for 34 places, rising to 520 applicants in 1968-9. In 1969, Professor Cook presented a development policy to restructure the first year of the degree course, to include one sandwich year in pharmacy practice within the three year course. This was rejected by the Board of Studies, even though it would have enabled an increase in the undergraduate intake by 50 per cent. Instead, the School Council proposed a new focus on the development of postgraduate courses.

But the demand for undergraduate places continued, with 579 UCCA applications for the BPharm course in 1969 for 64 first year places, a greater number of applicants than for any other UWIST course. The School retained its entry requirement of 3 A Levels, justifying keeping their entrance level high to allow for the best intake. The annual report for 1970-1 stated that this high grade entry was reflected in the high percentage of first and second (upper division) class honours degrees awarded. The course’s popularity continued with approximately 900 applications for the increased 75 first year places in 1972 leading Professor Cook to reflect that “the School is a very viable section of the Institute.”



CARDIFF
Copyright Reserved.

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN

THE PHARMACEUTICAL CHEMIST QUALIFYING EXAMINATION

PART I—SEPTEMBER, 1962.

PHARMACEUTICAL CHEMISTRY—I

Time Allowed—Three Hours.

Six, and not more than six, questions should be attempted; of these not more than Three questions may be taken from either section. Question I **MUST** *be attempted.*

SECTION I

1. *EITHER* Write brief notes on the following topics giving examples where possible:—
   (a) quantum Numbers,
   (b) covalent Bond,
   (c) transition Series,
   (d) hydrogen Bond.

   OR What do you understand by the terms:—
   (a) radioactive isotope
   (b) biological half life?

   Give examples of the use of radioactive isotopes in medicine. What are the hazards involved in using these materials and what precautions must be taken when they are handled?

2. By means of formulae and brief notes summarise the general methods available for the preparation and the general reactions of alcohols. Give clear graphic formulae (showing all valency bonds) for the following:—
   (a) methylethylcarbinol, (b) 2-(1-methylbutyl)-6-heptanol,
   (c) 2-methylpentane-3, 4-diol.

In the 1960s, the Pharmaceutical Chemist qualification continued alongside the degree course.

Christine Connolly graduated in 1969, later marrying her fellow student Graham Davis. A prize is awarded in her memory to a final year student who shows outstanding personal achievement and contribution to the School. (Graham Davis)

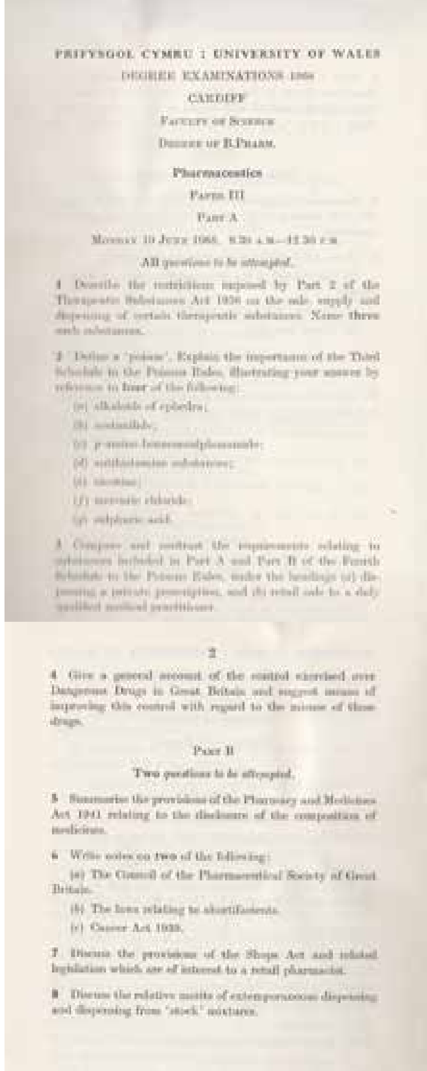
Clinical pharmacy

The course content began to develop in line with contemporary concerns about the need for practical training and an emphasis on clinical pharmacy. Nationally, PSGB President Cyril Maplethorpe was a key early advocate of the potential for pharmacists to play a much greater role in the healthcare team, as medicines adviser to other professionals as well as the public. The introduction of the National Health Service in 1948, the 'therapeutic revolution' of the 1950s and 1960s, the Thalidomide tragedy in 1962 and its consequences, particularly the Medicines Act of 1968, came together to change the pharmacist's role enormously.

The School was a pioneer in teaching and researching clinical pharmacy, initially led by Professor Cook who was a vocal advocate of increasing its place in the undergraduate course. In 1971, it was agreed that a small portion of the final year course would be devoted to "Community Pharmacy", orientated towards the vocational aspects of general practice and hospital pharmacy. In 1972, this broader course was offered as an option in the third year, rather than specialising in one of the four scientific areas.

The appointment of Peter Parish as Professor of Clinical Pharmacy embedded the subject in the School. Professor Parish revised the curriculum to introduce Clinical and Social Pharmacy as core subjects in the final year. They were also offered as an optional elective which included therapeutics, common symptoms and treatment, first aid and emergency medical treatment, medical microbiology and clinical immunology, community health, pharmacy administration and drug information. Parish argued that, rather than being left to the pre-reg year, these were important areas for undergraduate teaching. His focus was on communication with other healthcare professionals and patients, problem-solving, application of knowledge to patients and drugs, and the broader context of healthcare and use of medicines.

However, at a national level it took until 1977 for the first Pharmacy Practice research session to be introduced at the British Pharmaceutical Conference. This first session included papers on reporting adverse drug reactions, child resistant closures and the role of the pharmacist in health education and community health.



PRIFYSGOL CYMRU : UNIVERSITY OF WALES
DEGREE EXAMINATIONS 1968
CARDIFF
Faculty of Science
Degree of B.Pharm.

Pharmaceutics
Paper III
Part A
Monday 10 June 1968. 9.30 a.m.–12.30 p.m.
All questions to be attempted.

1 Describe the restrictions imposed by Part 2 of the Therapeutic Substances Act 1956 on the sale, supply and dispensing of certain therapeutic substances. Name **three** such substances.

2 Define a 'poison'. Explain the importance of the Third Schedule to the Poisons Rules, illustrating your answer by reference to **four** of the following:
(*a*) alkaloids of ephedra;
(*b*) acetanilide;
(*c*) *p*-amino-benzenesulphonamide;
(*d*) antihistamine substances;
(*e*) nicotine;
(*f*) mercuric chloride;
(*g*) sulphuric acid.

3 Compare and contrast the requirements relating to substances included in Part A and Part B of the Fourth Schedule to the Poisons Rules, under the headings (*a*) dispensing a private prescription, and (*b*) retail sale to a duly qualified medical practitioner.

2

4 Give a general account of the control exercised over Dangerous Drugs in Great Britain and suggest means of improving this control with regard to the misuse of these drugs.

Part B
Two questions to be attempted.

5 Summarise the provisions of the Pharmacy and Medicines Act 1941 relating to the disclosure of the composition of medicines.

6 Write notes on **two** of the following:
(*a*) The Council of the Pharmaceutical Society of Great Britain.
(*b*) The laws relating to advertisements.
(*c*) Cancer Act 1939.

7 Discuss the provisions of the Shops Act and related legislation which are of interest to a retail pharmacist.

8 Discuss the relative merits of extemporaneous dispensing and dispensing from 'stock' mixtures.

This 1968 exam paper looks back to legislation from the 1930s and 1940s, with the new comprehensive Medicines Act only coming into force in October of that year.

Interdisciplinary and vocational education

The entry of the UK into the European Economic Community (EEC) in January 1973 introduced discussion about a five year undergraduate Pharmacy course, proposed in an EEC draft directive for Pharmacy at that time. Speaking at a National Association of Women Pharmacists conference in Cardiff in April 1973, Professor Cook proposed a European-wide group to look at common pharmacy training across the Community, but recognised that the current state of UK university finances did not allow for any increase to the three year course.

More controversially, Cook argued that the student intake in pharmacy should be reduced nationally, perhaps even with the closure of some schools, in marked contrast with the trend to increase the number of departments, with Loughborough University, for example, proposing a new pharmacy course in 1974. *The Chemist and Druggist* backed Cook's arguments, writing in an editorial that a new pharmacy department would be "a lunatic waste of resources if ever there was one."

At the School's annual dinner in November 1974, Professor Cook continued to make waves when he proposed the establishment of a Faculty of Health Sciences in Cardiff with all students reading for a common basic degree followed by an additional postgraduate qualification to cover their specialist clinical, professional and vocational area. He also argued for more practical training, suggesting that "an improved service would result if contacts between student and patient were increased to enable the student to advise both prescriber and patient." His scheme would require Pharmacy to work closely with the Welsh National School of Medicine, and he suggested that the School of Pharmacy should take over the whole UWIST building.

Cook's proposal re-opened heated debate with the Medical School, focussed on the previous contentious issue of Pharmacology teaching. Professor Spriggs from the Medical School and Professors Cook and Spencer exchanged letters in the *Pharmaceutical Journal* in December 1974 debating the merits and practicalities of joint teaching of pharmacy and medical students. The Pharmacy professors claimed that, as the largest department within UWIST, Pharmacy should initiate a new institute that brought the School of Pharmacy, University College Cardiff and the Medical School together: "In this, medicine, and subjects allied to medicine could develop in close proximity along parallel lines, and clinical pharmacy (not synonymous with clinical pharmacology) would take its rightful place in the development."

In 1975, Professor Cook continued his campaign to reform the pharmacy degree with the proposal that there should be no specialisation in the pharmacy degree and no honours ("since there should be no such person as a second class pharmacist"). He suggested that the third year should be more vocational with areas such as Medicinal Chemistry exploring the pharmaceutical analysis of drugs in current use; Pharmaceutical Biology for common groups including "social pharmaceuticals" such as oral contraceptives and slimming preparations; Applied Pharmacology including side reactions and interactions of common drugs; and Pharmaceutical Technology required for formulation and development of common drugs. He also suggested the introduction of a Community Pharmacy section in two parts: study of the organisation and administration of the health service, including lectures from practising pharmacists; the practice of pharmacy with practical sessions building on previous pharmaceutical science teaching. He proposed the involvement of all staff members in discussion around topics including interaction, mode of action, legal restrictions, stability, and advice to patients, and also raised the possibility of involving medical students too. Clearly Professor Parish's expertise was significantly drawn on in these proposals.

Professor Cook's scheme would entail specialisation in postgraduate courses which most first degree pharmacy students would expect to go onto, after a pre-registration year. This pre-reg year, jointly supervised by a practising pharmacist and a university tutor, would then be viewed as the sandwich year in a "thick sandwich" degree course. He stated "The frontiers of pharmaceutical science have advanced so far that it is impossible to take the undergraduate to these frontiers in a three year course." In reality, the lengthening of the course would have to wait for more than 20 years.

Year group, late 1970s.

The 1980s course

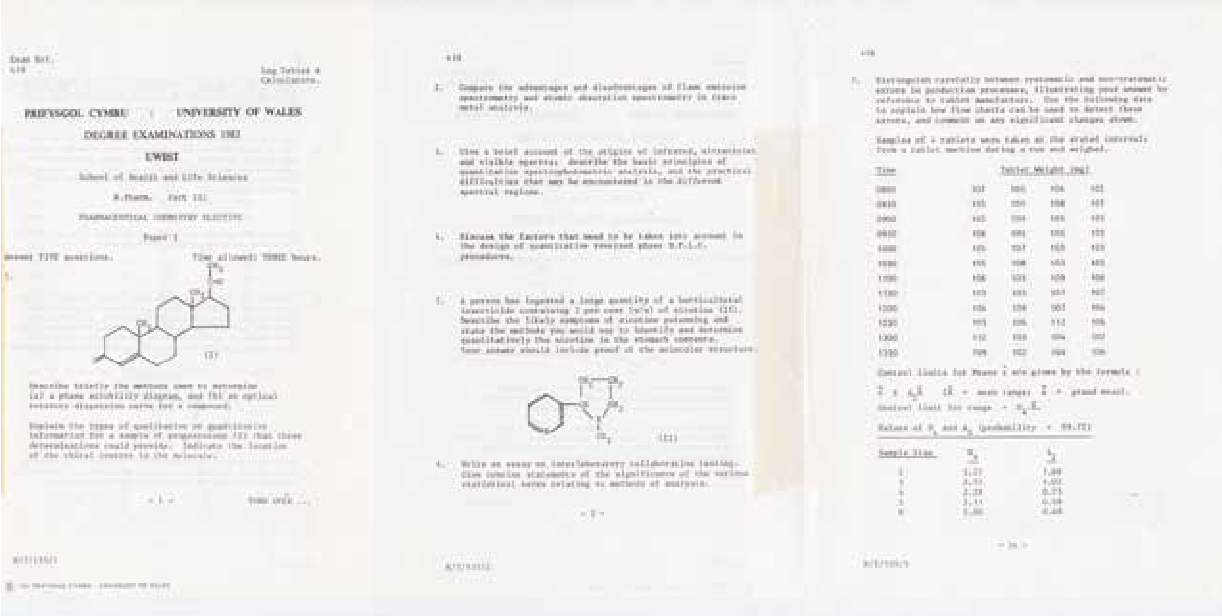
The Pharmacy course in 1980 was taught by the School's five divisions of Pharmaceutical Chemistry, Pharmaceutics, Pharmacognosy, Pharmacology and Clinical and Social Pharmacy. The BPharm degree was one of five offered by UWIST's School of Health and Life Sciences, with Professor Parish serving as Dean. Health and Life Sciences also offered BSc (Tech) Applied Social Psychology, BSc Applied Social Psychology, BSc (Tech) Occupational Psychology, and BSc Ophthalmic Optics. The sessional (annual) fee for Pharmacy in 1980 was £740, up from £649 in 1979 and £545 in 1977.

All Pharmacy students were required to have A Level Chemistry, plus two other subjects, ideally one from Maths, Statistics, Physics, or Advanced Engineering Science, and one from Biology, Zoology, Botany, or Human Biology. Once they arrived at the School, the first year course covered Biochemistry, Pharmaceutical Chemistry, Pharmaceutics, Pharmacognosy, Physiology and Pharmacology. In 1984, Terry Turner introduced an additional course of 10 lectures on pharmacy history into the first year. In Year 2, teaching focussed on Pharmaceutical Chemistry, Pharmaceutics, Pharmacognosy, and Pharmacology. In Year 3, 50 per cent of the time was devoted to a common core of Pharmaceutical Chemistry, Pharmaceutics, Pharmacology and Clinical Pharmacy. The remaining half was an elective topic, chosen from either Pharmaceutical Chemistry, Clinical and Social Pharmacy, Pharmaceutics, Pharmacognosy, or Applied Pharmacology. Field Studies and works visits were described as "a minor but essential part of the course" in a 1980 prospectus. Students also participated in ward rounds at local hospitals, and spent time in local health centres and general practice pharmacies, probably the first UK pharmacy school to introduce these elements. New additions to the course in 1980 also included "practical experience with microprocessors", for stock control, patient medicine records, and adverse drug effect monitoring. Computer use had clearly grown since the UWIST Computer Unit was first reported on in 1970, when student use "in the peak period of the Lent Term amounts to just over 70 hrs/month."

The course was clearly extremely popular: in 1985, the School was receiving 1,400 applications every year for the 60 undergraduate places available. The number of international students also increased in this period with around 30 students at the School in total.

Aseptic filling of vaccine bottles in the Pharmaceutical Microbiology Laboratories, 1982. (Glamorgan Archives)

Terry Turner led a regular Phytopharmacy field trip to mid Wales in the 1980s. (T. D. Turner)


PRIFYSGOL CYMRU : UNIVERSITY OF WALES

DEGREE EXAMINATIONS 1983

UWIST

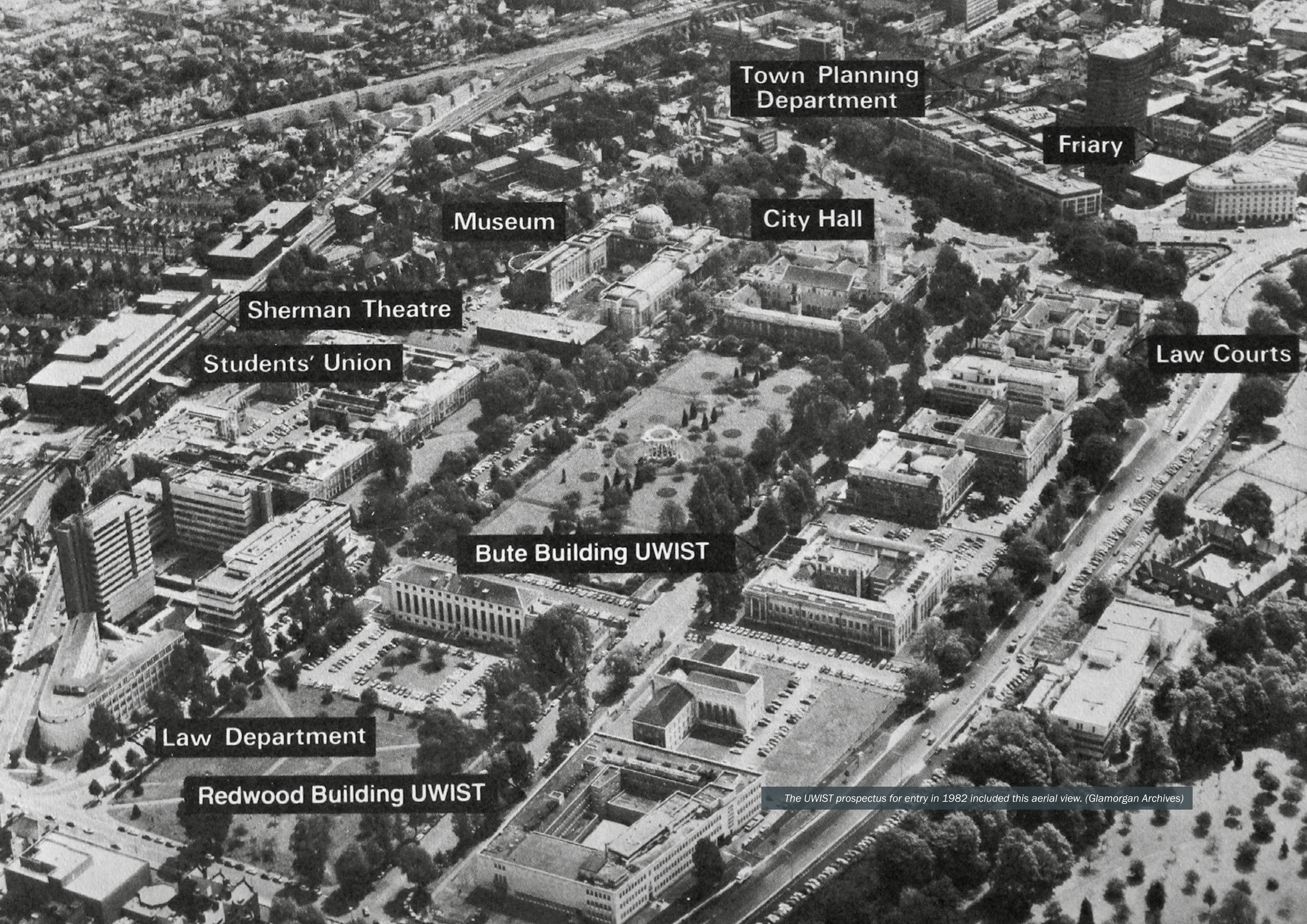
School of Health and Life Sciences

B.Pharm. Part III

PHARMACEUTICAL CHEMISTRY ELECTIVE

Paper I

Answer FIVE questions. Time allowed: THREE hours.



The UWIST prospectus for entry in 1982 included this aerial view. (Glamorgan Archives)

The national context

The climate for Higher Education in the 1980s was extremely challenging. In 1981, *The Chemist and Druggist* reported that the University Grants Committee (UGC) had advised all schools of pharmacy to cut student intakes after reductions in Government grants. Four or five schools had had a recommended cut of up to 25 per cent, others less. Cardiff's Professor Paul Spencer was serving as Vice Chairman of the UK Heads of Schools of Pharmacy Committee at the time, and expressed his "cold anger" with the UGC for not consulting before issuing this advice. He believed that the PSGB Council opinion that too many pharmacists were being trained was an "oversight'.

A step-change came in March 1986 with the publication of the Nuffield Report, the result of a review established in 1983 by the Nuffield Foundation "to consider the present and future structure of the practice of pharmacy in its several branches and its potential contribution to healthcare and to review the education and training of pharmacists accordingly." The Report's 96 wide-ranging recommendations included that the traditional set up of pharmacy departments into four areas each with their own allocated staff, space and funding was restricting development. Subjects should be grouped, and teaching should concentrate on other key skills such as communication. As a result of the Report, 16 Pharmacy Practice chairs were established in the following 10 years, and the BPharm course was altered radically. In fact, the Welsh School of Pharmacy with its focus on Clinical Pharmacy and practice skills was ahead of these developments by about a decade. However, Paul Spencer speaking at BPC in September 1986 expressed his disappointment that the report did not offer any practical ways forward or acknowledge the reduction in resources that pharmacy schools were battling. He was reported in *The Times* as saying "the pharmacy profession is being crippled by government education policies."

In 1986, the School appointed their first Teacher-Practitioner, Darrell Baker, who shared his time with the University Hospital of Wales. Shivaun Gammie joined in 1989 as the Cardiff Royal Infirmary Teacher-Practitioner, and Claire Grout started soon afterwards from Llandough. These three hospital pharmacists worked alongside Fran Collins as a community pharmacist Teacher-Practitioner from Boots. Each worked around two days a week in the School, particularly supporting practice research projects.

Research

Once settled into the New Building, it was possible to significantly increase the number of staff, students, time and facilities dedicated to research. Although the School's MPharm in Research had been introduced in 1942, little research was undertaken until the late 1950s. From 1961 with an influx of staff with higher degrees and improved facilities, more research students could be recruited. An article in the *Pharmaceutical Journal* in 1961 published the results of a national survey of all current research in Schools of Pharmacy, carried out by the PSGB Director of Pharmaceutical Sciences. The Welsh School was listed as having 16 current projects including factors affecting the reproducibility of particle size following ball-milling, the effect of moisture on stability of dental fillings, the synthesis of hydroxylated sulphones and other antibacterials, and macrocyclic compounds related to steroid hormones. The following year, the survey was run again and the School was hosting three research students in Pharmaceutics, seven in Pharmaceutical Chemistry, one in Pharmacology, with four more research places potentially available.

In 1962 the School was recognised by the University of Wales as a place of research for the degree of Doctor of Philosophy (PhD) in Pharmacy, and a number of students began to prepare for the degree. The first PhD graduate was Malcolm Davies who submitted his doctoral thesis 'Derivatives of Coumarin related to Khellin and allied compounds' in December 1964, and successfully defended it in 1965. He was one of three 1961 graduates who stayed on as postgraduates. Margaret Rees undertook studies in Pharmaceutics with Ken James and Eric Brierley worked in Pharmaceutical Chemistry, initially with Vernon Askam but later with Dr John Smith. Although Margaret Rees was the first of the three to submit a thesis, Malcolm Davies was the first to successfully defend his doctorate. Eric Brierley appears in the October 1967 pass list with the title 'Studies on the active constituents of a commercial Derris resin.' Brierley was an outstanding sportsman and won the men's University of Wales open Table Tennis Championship. He also served as WPSA Chairman in 1960-61. Margaret Rees had been Vice Chair of the UWIST Students' Union when the New Building had been officially opened. Both Malcolm Davies and Margaret Rees stayed at the School as staff members. The next pharmacy doctorates to be announced, in the October 1968 pass list, were Reginald Hugh Leverett Deeks with 'An investigation of synthetic routes towards derivatives of aporphine' and Ryland Vaughan Griffiths with 'A critical assessment of some factors affecting the size-enlargement and compression of medicinal substances.'

The number of research students grew steadily through the 1960s and 1970s, with 14 full-time and four part-time in the first year in UWIST in 1968-9, and 22 full-time and eight part-time in 1972-3.

Dr John Pugh and Susanna Gilmour-White, 1975. (Dr Chris Wainwright)

External links

The 1960s saw staff working more closely with industry and hospitals. For example, in 1965 the Pharmaceutical Chemistry team were reported as collaborating with industry colleagues on hemisynthetic products, and had recently instigated a postgraduate research scheme in industry. Pharmaceutics had close ties with the plastic and cosmetic industries, and also developed an advisory role on aseptic labs and air-filtration systems for new hospital departments. In Pharmacognosy, researchers were working with a hospital paediatric pathology department to investigate plant agglutinins, and also providing advice to other colleges on the problems of telemicro-projection. Pharmacognosy also offered an extension course in Analytical Microscopy for analysts.

Dr Ralph Bowman, Research Fellow in Pharmaceutical Chemistry, previously at Parke Davis, 1976. (Dr Chris Wainwright)

In the annual report for 1968-9, it was noted that staff from pharmaceutical firms were now enrolling as external students in order to read for higher degrees in pharmacy under the direction of the School's academic staff.

International links

The School established strong links with universities overseas. In 1965, it was reported that an unnamed staff member was a Visiting Lecturer in Pharmaceutical Chemistry at the University of Ife in Nigeria. In 1968, Professor Cook was appointed external examiner in pharmacy for the Ife school, and in the same year Mr Ingram, Dr Armstrong, Mr Barnett and Mr Furr were granted leave of absence to provide assistance in Pharmaceutics teaching at the University.

Other staff travelled widely to share their research and experience. In 1968, Professor Cook took part in a meeting of the Franco-British Pharmaceutical Commission held at Tours, France, on poisons, and also visited Cairo and Alexandria as the guest of the Egyptian Ministry of Higher Education, to advise on academic staffing of Schools of Pharmacy in Africa.

Terry Turner remembered staff members seeing him off from Cardiff Airport for his first overseas trip from the School. By 1977, he was a seasoned traveller, giving a paper on plant tissue culture as a source of phytopharmaceuticals at the Commonwealth Pharmacists Association conference in Bombay.

Funding

All of this research work depended on a steady stream of funding and grants. In 1968-9, the School reported two research grants: Dr R. H. L. Deeks, received £1,400 from Biorex Laboratories Ltd for work on the synthesis of aporphines of medical interest, and Dr P. J. Nicholls gained £650 from AH Robbins and Co for research into the physiological disposition of succinimides. In the following year, there were five successful grants, including new projects from Mike Barnett who received £730 from Coulter Electronics Ltd for a project on 'Comparative Evaluation of Coulter Counter and Double Image Microscopical Techniques for Particle Size Analysis' and for Ken James who received a grant from the Pharmaceutical Society to investigate the 'Influence of Structure on Solubility Profile of Steroid Esters.' Meanwhile Professor Spencer gained £2,700 from Reckitt and Coleman Ltd in 1972, for neuropharmacological research.

In contrast, research work in Clinical Pharmacy depended more heavily on partnerships. In 1969, joint research projects were started with the Adfer Unit at Whitchurch Hospital into the metabolism of drugs in chronic alcoholic patients, and with the Cardiff Postgraduate Federation in Chest Diseases on nicotine dependence. The School hosted an alcohol and drugs open day on 23 September 1970, part of the Third International Symposium on Drug and Alcohol Abuse, including an exhibition of production of drugs from raw materials, and demonstrations of methods available for detection of alcohol in bodily fluids by the Chemistry Department.

During the 1970s, the School was carrying out leading research in Tissue Culture and Wound Management, including a partnership with the Welsh Hospital Board on assessment of surgical dressings. Terry Turner established a steady stream of grants from Johnson & Johnson and others, totalling close to £5,000 in this period (about £46,000 in today's money). A report in *The Times* in 1985 stated "The school boasts the only wound dressing evaluation centre in Britain where a large variety of bandages, plasters and other materials are tested and evaluated for both government and commercial bodies."

Carrying out research in the Surgical Dressings Research Group, early 1980s. (T. D. Turner)

Peter Martin, Chief Technician in Pharmaceutical Chemistry, 1976. (Dr Chris Wainwright)

Denver Russell
1936-2004

Allan Denver Russell gained his Pharmacy degree from the University of Wales in 1957, registering in 1958. After obtaining his Doctor of Philosophy degree in Pharmaceutical Microbiology from Nottingham University working under Dr W. B. Hugo he returned to Cardiff School of Pharmacy in 1961 as an Assistant Lecturer. Successive promotions brought the award of a personal chair in Pharmaceutical Microbiology in 1991. He was also Director of Undergraduate Studies in the 1990s.

Over a 40 year period at the School, Denver Russell supervised more than 45 PhD students, produced over 450 publications and was author or editor of 16 books including the standard undergraduate textbook *Pharmaceutical Microbiology* with W. B. Hugo. He was a leading global authority on biocide usage and its possible association with antibiotic resistance.

Professor Russell was awarded a DSc from the University of Wales in 1975 and a Fellowship of the Royal College of Pathologists in 1982. In 1999 he was elected as a Fellow of the American Academy of Microbiology, a rare honour for a British scientist. He was also designated a Fellow of the PSGB in 1981, of the Society for Applied Bacteriology and of the Hospital Infection Society. He served on the editorial board for the *Journal of Applied Bacteriology*, and was a member of a number of committees including for the Society of Applied Bacteriology, the Federation of European Microbiological Science, the Veterinary Products committee, and the Department of Health Microbiology Advisory Committee.

Professor Russell retired from his full-time post in the School of Pharmacy in 2001, but remained a part-time research Professor in the School until his death.

British Pharmaceutical Conferences

The annual British Pharmaceutical Conference (BPC) continued to offer an ideal opportunity to showcase some of this new research. During the 1960s, it seemed that one Cardiff project was presented each year. In 1962, it was Mike Barnett and Ken James on “Particle size distribution of marble on wet ball milling. Effect of the solid:liquid ratio.” In 1964, H. William presented on “Reaction of Ephedrine with Chloroform”, and in 1968, the BPC at Birmingham heard from D. B. Bowen and K. C. James on “Testosterone Proprionate: solubilities in non-polar solvents at 100 degrees.”

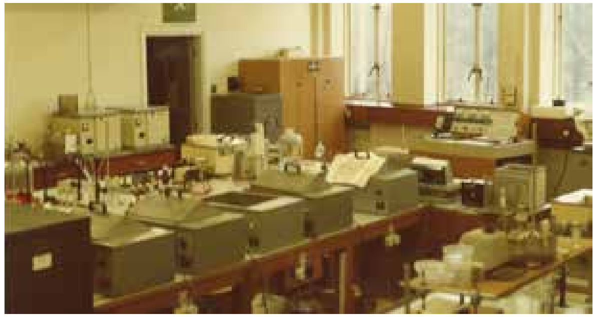
In 1970, the School presented two papers: a science session on tabletting, specifically the explosive disintegration of compacted magnesium carbonate in water, and another on predictions of the solubility of testosterone propionate in varying solvents. The following year, Dr C. D. Clarke reported on the use of crystal violet to test the major mechanism for the adsorption of bases onto kaolin. Dr P. J. Nicholls spoke about his research into cotton workers suffering from byssinosis (a chronic lung disease caused by exposure to cotton fibre dust). This was a long-term project in the School’s Applied Pharmacology department, funded by the Medical Research Council, with work to examine samples of the cotton and measure their histamine constituents. In 1968, Dr Nicholls had participated in the International Symposium on Diseases in Textile Workers held in Alicante, Spain.

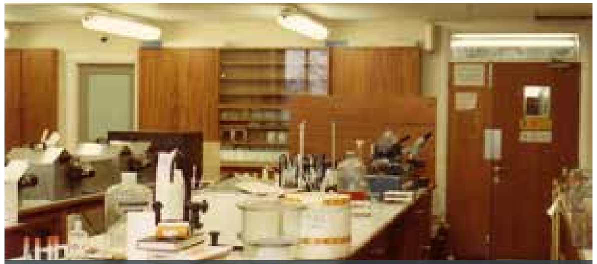
In 1974, R. D. E. Sewell and P. S. J. Spencer presented on the interactions of morphine with brain amines, and D. K. Luscombe and S. A. Taha gave their findings on the potentially useful oral hypoglycaemic acid found in the leaves of *Asadirachta indica*, the neem tree. David Luscombe also presented at BPC in 1975, this time with Paul Nicholls on the activity of anti-convulsant beclamide. In 1977, Dr N. A. Armstrong ran a demonstration session at BPC showing the issues surrounding retention of tablets and capsules in the oesophagus, causing potential problems especially with drugs commonly associated with gastric ulcers.

Research at the cutting-edge

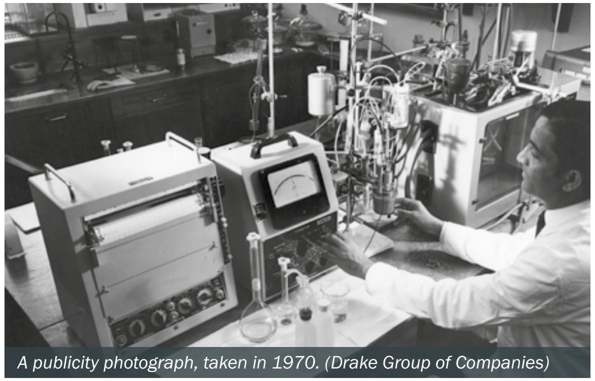
Terry Turner had been appointed as Lecturer in Pharmaceutical Microbiology in January 1957. With the arrival of Allan Denver Russell in around 1961, the School developed a strong reputation in this area, still in place today. This emphasis on the control of microorganisms, encompassing the preservation of pharmaceutical products, sterilisation, disinfection, antisepsis and antimicrobial therapy, was rare in schools of pharmacy in the 1960s.

In 1970 Denver Russell gained two significant research grants: £2,550 from the Wellcome Trust for a study into the antifungal effects of polyene antibiotics, and £4,650 from Arbrook Inc, Arlington, Texas, for a study of the sporicidal action of glutaraldehyde. Professor Russell moved into antibiotic resistance research from around 1971, with funding from the Wellcome Trust, Lawson Tait Medical and Scientific Research Trust and Kodak Ltd.





Dr David Rogers captured the Pharmaceutical Microbiology laboratory, in about 1978, whilst a PhD student of Dr A. D. Russell. (Dr David T. Rogers)


A publicity photograph, taken in 1970. (Drake Group of Companies)

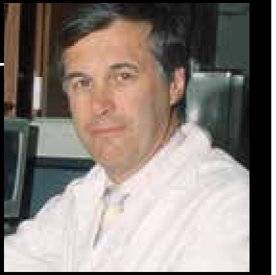
In 1976, Dr D. J. Bailey and Dr N. S. Doggett focussed on synthetic substances with an impact on prolonged oestrogen therapy working with the National Research Development Corporation. In May 1983, Professor Ian Kellaway was the only pharmacist to receive one of six awards from Pfizer Ltd to support young British scientists looking for new drugs. He was awarded £1,500 to work on colloidal drug delivery systems and the release of drugs from semi-solid dose forms. Two years later, he was awarded "New Blood" funding, to appoint a researcher specifically for work on controlled drug delivery and drug targetting. In 1984, it was announced that Paul Nicholls and John Smith had received a £39,000 grant from the Cancer Research Campaign over 3 years to support the synthesis and pharmacological evaluation of new analogues of aminoglutethimide, an enzyme inhibitor used in breast cancer therapy. This project achieved national headlines in *The Times* in November 1985, providing significant publicity for the School's research achievements.

With the assertive move into Clinical Pharmacy teaching and research, staff from Cardiff spoke and published regularly in these areas. At BPC in 1974, Paul Spencer proposed that publicity was required to remind GPs to make regular use of pharmacists' expertise. The following year, Dr D. Bailey highlighted the difficulties presented by the lack of information on medicine labels for pharmacists advising alcoholics about the risks of taking medicines that contained alcohol. On 15 September 1976, a report of Professor Peter Parish's paper at the BPC in St Andrew's appeared in *The Times* under the headline "Pharmacists should be doctors' advisers." Professor Parish continued to lecture and publish in these areas throughout the 1970s, focusing on the benefits of multidisciplinary teams, and the economic advantages of education for doctors and patients to reduce medicines wastage. However, his plans to enhance related teaching were curtailed in 1977, with a decision by the PSGB not to fund an educational consultant "to advise on teaching methods in clinical and social pharmacy at the school and on curriculum development."

By 1980 UWIST had nearly 3,000 students, of which 360 were postgraduates undertaking taught or research degrees. The high profile of research within the Pharmacy School was a useful recruitment tool, and prospectuses highlighted the available areas. In 1982, this included the Medicines Research Unit run by Professor Parish, promoting multidisciplinary research and education into the appropriate, safe and economic use of medicines.

Developments in pharmacy practice also prompted research opportunities. In 1984, Robert Stevens and Alan Crabbe investigated the use of printed labels in community pharmacy, almost a year since the general introduction of printed labels to replace handwritten versions. The following year, an article in *The Chemist and Druggist* showcased the Medlock patient record system, designed by BS Information Services Ltd, a company set up by Dr Stevens. It consisted of a key made of tough plastic with a microchip embedded in it, which held patient information. When the key was inserted into a "Keyceptacle" on each visit to the pharmacy or doctor's surgery, it allowed access to the data for both, and could be updated to reflect a new prescription. The initial prototype could hold information about up to four drugs and was tested with 50 patients over four months in a pharmacy near Cardiff. The trial was extended to 300 keys able to hold details of 10 drugs, with the ambition that the final version would have a memory of 2000 bytes, enough to cover "any amount of polypharmacy." The project was of significant enough public interest to appear in *The Times* in April 1985, and by 1988 the technology had progressed to allow smart cards to be trialled with 33,000 patients in Pontypridd, funded with a Department of Health and Social Security grant. As well as managing medicines more effectively, the aim was to "check the accumulative and relative effects new medicines might have on a patient."

Tony Campbell

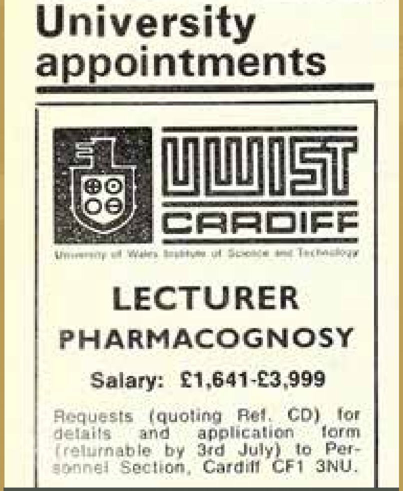


In 1972, Dr Anthony Campbell (later Professor at the School of Pharmacy), then at the Welsh National School of Medicine, became curious about a British luminous jellyfish, and other animals that produce their own light through a chemical reaction – bioluminescence. With an electronic engineer, Malcolm Ryall, Tony constructed the most sensitive detector in the world at that time, to study this phenomenon, and apply it to medical research and clinical diagnosis, including cancer, immune based diseases, bacterial and viral disease, and medical problems with drugs, hormones and vitamins. His Department of Medical Biochemistry, led by Professor Hales, was a world leader in immunoassay.

Tony suggested using a chemiluminescent probe to tag antibodies and DNA, based on the sensitivity of the flash of the luminous jellyfish. This idea and technology was then developed with his colleague Dr Stuart Woodhead (now Professor), an expert in immunoassay, and then with Dr Ian Weeks (now Professor). A key experiment, designed by Tony Campbell, was how to get the chemiluminescent compound attached to an antibody to flash. It led to a number of UK, European, and US patents, the first being filed in 1978 in the UK, and a crucial one in 1982. This is a great example of how curiosity about an amazing phenomenon led, unexpectedly, to a major application in biomedicine, with huge benefits to millions of people, and large economic dividends. This was recognised by the Queen's Anniversary Prize in 1998, and was selected by the Eureka project of Universities UK in 2006 as one of the top hundred inventions and discoveries from UK Universities in the past 50 years.

The Times again praised the School as "research-orientated" with a piece in 1985 describing its "high reputation." At this point, nearly a quarter of its 280 students were postgraduate, working in research areas including the distribution of anti-inflammatories to the actual site of rheumatoid disease, and the restriction of drugs to the lungs in the treatment of asthmatic or infectious conditions. By 1987, when an article in *The Chemist and Druggist* outlined the research opportunities in all schools of pharmacy, the Welsh school particularly highlighted its practice research strand including projects looking at drug prescribing in residential homes for the elderly; evaluation of query answering services provided by the drug information service in Wales; applications of a computerised drug distribution database in the district general hospital; and drug-related problems in an Accident and Emergency department.

In contrast to the constrained research facilities available in the old Technical College, the New Building enabled a significant breadth of research projects, and the corresponding lists of publications in each year's Annual Report were impressive in comparison with other UWIST departments. However, it was clear that space restraints were a constant concern, even in the early 1970s with the building only a decade old. By the mid-1980s, the concerned voices were getting louder as balancing the School's popularity, the research funding available, and the wider context of cuts to Higher Education grants, created increasing tensions.



University appointments

UWIST
CARDIFF
University of Wales Institute of Science and Technology

LECTURER
PHARMACOGNOSY

Salary: £1,641-£3,999

Requests (quoting Ref. CD) for details and application form (returnable by 3rd July) to Personnel Section, Cardiff CF1 3NU.

The Chemist and Druggist, 10 June 1972.
(Chemist + Druggist)

Setting up the lab in a publicity photograph, taken in 1970.
(Drake Group of Companies)

Facilities

A surviving Welsh College of Advanced Technology prospectus from 1963 provides a valuable insight into the School's facilities soon after its move into the New Building. Unsurprisingly, the description of the department is little changed from when it opened in 1960. Pharmaceutical Chemistry had two large teaching labs on the ground floor, and its five research labs are emphasised. Pharmaceutics had six teaching labs on the first floor for General Pharmaceutics, Pharmaceutical Engineering Science and Technology, Aseptic Processing, and Modern Dispensing, plus four specialised research labs. On the second (top) floor, there were three teaching labs for Pharmacognosy, and for Physiology and Pharmacology.

A detailed report in *The Chemist and Druggist* in July 1961 sheds light on Cardiff's aseptic laboratory, comparing it with a new one in Manchester. Cardiff's is described as the "most ambitious and enterprising...Each student at Cardiff puts on a sterile plastic cap, apron and boots before entering the sterile room; and thus gains excellent experience of the conditions under which aseptic work is performed in industry." In contrast, the Manchester students were not asked to change clothes and so accepted that their room was not sterile.

By 1965, the facilities were 15 teaching laboratories and lecture rooms, eight research labs, plus ancillary rooms for stores, service and preparation, totalling about 20,000 square feet.

The School's lecture theatre was heavily used by many other bodies, including the Cardiff PSGB Branch, and the Centre for Extension Courses in Pharmacology and Radioisotope Dispensing organised by the School and attended by members of the South Wales branches.

The School's Pharmacognosy Department, led by Terry Turner, pioneered the use of closed circuit television for teaching in this period. Mr Turner shared full technical specifications and set-up details in articles in both the *Pharmaceutical Journal* and the *Western Mail*. "Telemicroprojection" allowed a single lecturer to present techniques and results to students in more than one room or even more than one building at a time. With a two-way sound link, all students could take part in discussions or ask questions. Mr Turner felt sure that students' acceptance of television in their lives meant that they accepted it into their education. The CCTV was used with a close-up lens for a large group to see a technique in detail, and also to demonstrate techniques with small or delicate apparatus or with the use of a microscope on a number of monitors. One advantage over a recorded film was that students could request that something be repeated if they had not understood it.

By the end of the 1960s, the accommodation in the New Building was feeling restricted. In 1968 permission was given to convert two classrooms into a new teaching Pharmacology lab for 32 students, alongside a special equipment grant of £5,000 to kit it out. An inspection by the PSGB in 1969 recommended that a large increase in the undergraduate intake should be considered, but this would clearly need additional facilities. The UWIST annual report for 1970-71 announced the completion of a new tower block in the New Building and the acquisition of four offices, which partially solved the problem of staff accommodation. In the same year, the Applied Biology Department moved out to the Llysdinam Field Centre, and the subsequent space was adapted as animal houses. However, the report made it clear that "although this will enable teaching and research to continue, it is still markedly below the standard of such accommodation in similar University establishments."

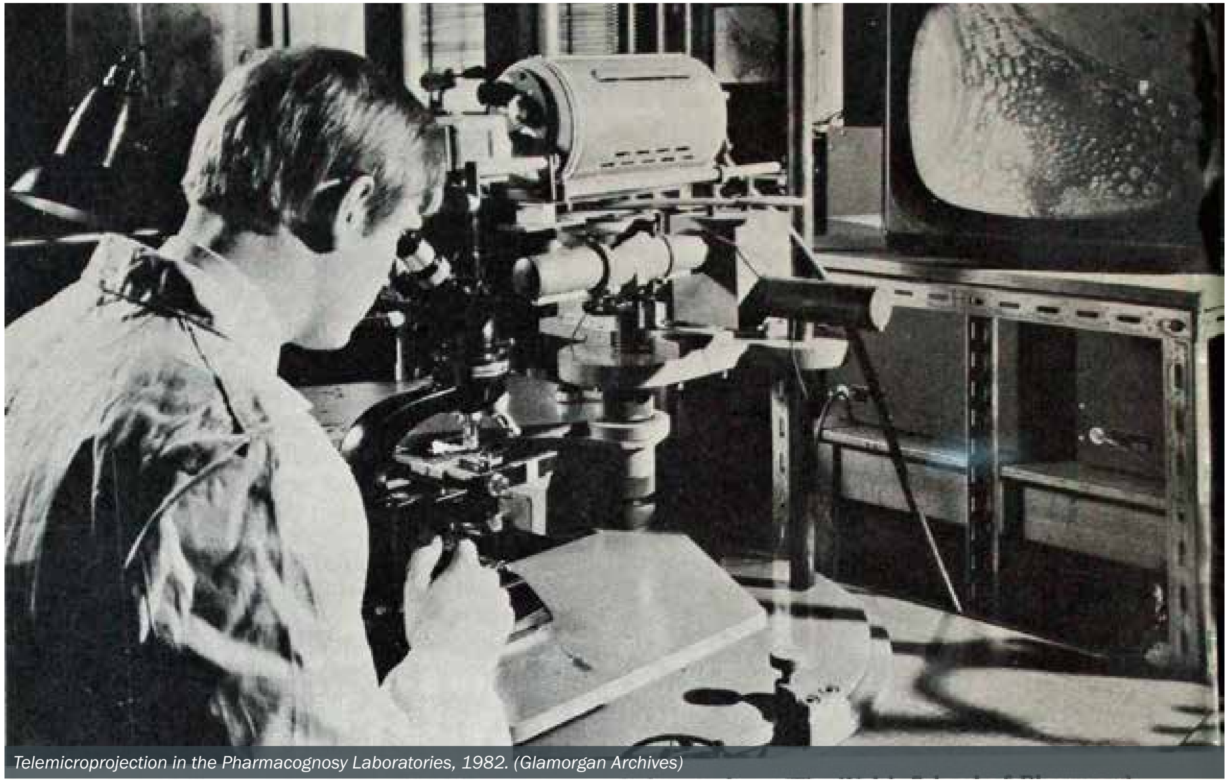
There were wider plans under consideration for UWIST. However, an announcement in 1972 halted them in their tracks. The Institute's Registrar reported that "All activities, hopes, and plans of UWIST, for the year under review, were overshadowed by the announcement in February that the Secretary of State for Wales had refused to confirm the Compulsory Purchase Order which would have enabled development plans for the Higher Education Precinct to proceed." These plans had included new buildings on railway land behind Colum Road for Architecture and Civil Engineering and Building Technology, which were now cancelled. The removal of the Pharmacy workshop to Tal-y-Bont and subsequent re-allocation of space for Pharmacology research was carried out in 1973. An updated CCTV system with AV recording facilities was also installed in that year, and the purchase of a freezing microtome was reported to enable research into the distribution of radioactively labelled drugs to be extended to whole body autoradiography.

The Pharmacognosy Department pioneered the use of Closed Circuit Television in the 1960s.

The UWIST Registrar's report for 1973 was much more upbeat, with the possibility of a new site at Llantarnam near Newport with new college buildings for 3,600 students by 1983-4. The Institute also expanded its staffing, with a new Assistant Principal post (taken by the existing Head of Chemistry) and a Director of Extra-Departmental Activities. This role was established to "encourage training and coordination to maximise time" at the Institute with examples given of drama, music and poetry, films, art exhibitions, a Common Market Colloquium, the establishment of an Indian Society and an Overseas Students' Association, all presented as an enhancement to students' experiences.

> "In its years in cramped conditions, much has been achieved of which UWIST may be proud. UWIST has at last been offered a splendid opportunity to develop. In this new situation of challenge, an entirely different set of problems will need to be faced by academic and administrative staff alike." UWIST Annual Report, 1973

Meanwhile, the much-needed development of the Pharmacy Department was undertaken with funding partly achieved from the pharmaceutical industry. In 1975, the Practice of Pharmacy laboratory was refitted to accommodate 50 per cent more students. Drugs were supplied by pharmaceutical companies, some for free, and the furniture was installed to encourage group working and increase capacity. Each group's unit was stocked to contain all the preparations needed for dispensing the sample forms on the students' schedules. This was a marked improvement to the previous situation where there was only one set of preparations and only eight students able to work at each session. The laboratory was formally opened by Mr J. Bannerman, PSGB President, who said he "was gratified to see students exposed to dispensing, regardless of wherever they finally practised – the knowledge gained was fundamental to the pharmacist's unique contribution in the pharmaceutical industry."


Telemicroprojection in the Pharmacognosy Laboratories, 1982. (Glamorgan Archives)

In a letter to the *Pharmaceutical Journal* in November 1982, Terry Turner reflected on changes within his Pharmacognosy department in the last 20 years, changes that in turn shed light on the School's development as a whole. Contrasting 1960s and current photographs of the Pharmacognosy lab, Mr Turner highlighted the complete refit of the room to accommodate more students, the introduction of new equipment for extraction and constituent separation by chromatographic and electrophoretic techniques, the addition of new sophisticated binocular microscopes with phase contrast, polarising elements and particle sizing attachments, the continued use of closed circuit telemicroprojection to show or repeat difficult demonstrations/techniques, and a laboratory micro-computer for crude drug particulate material and fibre analysis. However, he also noted the ongoing need for a "macro reference collection of crude drugs," the technological developments couldn't override that the science must rest on authentic materials. Mr Turner also recognised the continuous support for Pharmacognosy by successive Heads of School, something in marked contrast to other pharmacy schools where Pharmacognosy had been lost from the timetable almost entirely.

In May 1986, an entirely new lab was opened to support Pharmacy Practice teaching for both undergraduate and postgraduate students. It was set out for twenty students working in pairs. Facilities included areas for interpreting and dispensing prescriptions, role play with video feedback, computer assisted learning, self-teach programmes, and a drugs information room. The dispensing units were collapsible to allow use as a seminar room, and the products used for teaching were donated by pharmaceutical companies.

A publicity photograph, taken in 1970.
(Drake Group of Companies)

Ode to a Crude Drug of Unknown Origin

Up in the lab at the top of the stairs
There's Stevens, Brain and Turner
The first two ain't bad for which we are glad
But Terry is definitely sterner.
Up there all day – with plants they play
with microscopes and computers
They all call it Cog' but I'm thick as a log
And it don't make sense!

Now Terry has grown a terrible drug
Which makes you high and excited
It's called Cannabis but don't try this
Or there's a chance you may get to like it
He's written a book – and when you are stuck
You are supposed to consult it
Especially in pracs – when the knowledge you lack
But it don't make sense!

We have to learn to identify drugs
By extraction and looking and testing
We tried tlc – which just muddled me
And so we always end up by guessing
I wonder why- all their lives they try
These confusing things to teach us
They all call it cog' - but I'm thick as a log
And it don't make sense!

Found inside a copy of Trease and Evans' Pharmacognosy, early 1980s.

Student life

Accommodation

During this period, accommodation was a constant challenge for students in Cardiff. Although there were a number of options, a severe shortage of hall places available meant that few pharmacy students took this route, while the majority lived in lodgings, or at home if they were originally from Cardiff. Once they had made friends in the first year, a number moved into rented rooms in subsequent years, cooking their own meals and fending for themselves.

The University of Wales prospectus for 1961-62 laid out the University Regulations: “Applicants who live a long distance from Cardiff, and who have no legal guardians in Cardiff, may be required to live in a hostel.” Students were first supposed to apply for admission to a Hall of Residence, listed as University Hall in Penylan and Llandaff House in Penarth for men, and Aberdare Hall for women. Otherwise they could take lodgings that had been approved by the University, a list of which was obtainable from July from the Students’ Advisory Office at 51 Park Place. They had all been inspected by a qualified Health Visitor. All new entrants also had to have a chest X-ray, provided by a Radiography Unit visiting during Michaelmas Term 1961 “as part of the arrangements for maintaining the health of students.”

For those living in halls, it was an opportunity to befriend students from other courses. There was a policy for shared rooms in halls with one Arts and one Science student to make sure they mixed. Mike Allwood, arriving as a pharmacy student in 1961 remembers “For my first two years I shared a room with two other students at Llandaff House in Penarth (would this happen now without some comment?) For the following two years I shared a room with one of them, a music student - we even had a piano in our bedroom, so I was surrounded by music most evenings, so like Wales!!!” Aberdare Hall had only recently become available for female pharmacy students, and those who lived there formed a tight-knit community. Past residents remember clearly that all “boys” had to leave by 10pm. Brian Jones remembers that in University Hall women were only allowed as visitors for afternoon tea on Sundays between 2pm and 5pm, and in the library, never in a man’s rooms.

However, development of student accommodation was perennially slow. In 1968, it was reported that extensions to the Halls of Residence at Penylan had been cancelled due to the withdrawal of building grant money by the Universities Grants Committee. Traherne Hall which had opened in 1965 for male students was clearly facing problems, but the Student Union handbook decided that “whatever the difficulties at Traherne Hall, the students there will be considerably better off than in some of the lodgings they might otherwise be forced to use.” The decision was taken for Traherne Hall to put bunk beds in each room to double the capacity as no other accommodation was available. Of 151 students resident in Traherne, eight were from Pharmacy. One was Paul Cooke who remembers that the half hour walk to the Redwood Building was quite a challenge for an early start. Accommodation capacity was increased in 1973 with agreed use of the YMCA at Glan-y-Mor, Barry as additional accommodation.

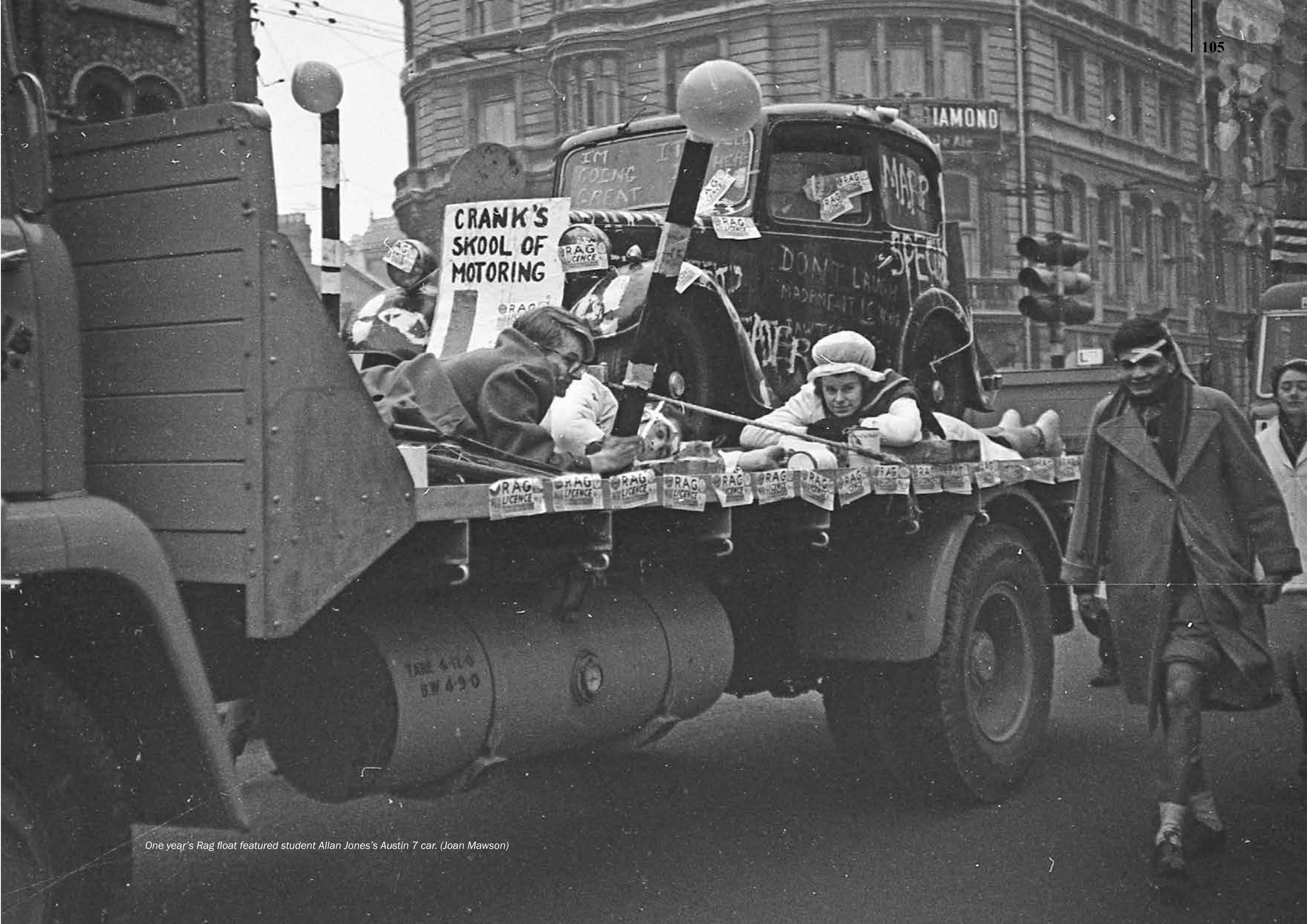
University activities

The intensity of the pharmacy course meant that it could be challenging to fit in a social life as well, certainly in comparison to some of the other courses. However, pharmacy students, after the establishment of the Welsh CAT in 1957, could be members of both their students’ union and the University College Students Union, so there were plenty of activities to choose from including Rag Week and the Inter-College Eisteddfod. One past student recalls with relish that during their time Pharmacy were the Rag Week champion scavenger hunt winners for years 2 and 3, beating the medics into second place both times. There are also memories of building chariots for a Rag Week race and floats for a parade, including one with an old Austin 7 car mounted on the front. One year, there were unsubstantiated reports of a group of Pharmacy students wearing wellies and marching single-file through a Queen Street multiple store loudly chanting: “boots!, boots!, boots!, boots!”

The Union also ran Friday night debates, and occasional glamorous balls at the City Hall with some students walking to the Top Rank cafe for a Breakfast Dance the following morning. The University also offered separate women’s and men’s common rooms in the main University Building in Cathays Park, complete with coffee and Chelsea buns or Eccles cakes. As alumnus Roger Pickett put it, “I slept at home, but did most of my ‘living’ in the students’ union in Dumfries Place!” In 1960, the Union applied for a licence to install a bar, but it was rejected by Cardiff City Council with the riposte that if students had enough money to buy beer then their grants would be reduced accordingly.

Enjoying the tea party after graduation, 21 July 1961. (Brian Jones)

Opportunities to interact with other students came both at School and University level, even more so when the UWIST and University College Student Unions combined in 1968, with a membership of 7,500. The combined Student Union had a newly refurbished licensed bar, a new Bank Kiosk [sic] the Junior Common Room had hired a colour television, and original paintings from The Welsh Arts Council for display in the Hall. The Union had also bought a minibus for use by clubs and societies, and a second one in 1970. There was an impressive breadth of groups including Blues, Poetry, Gliding, Rifle and Pistol, Railway, and Angling. The Rugby Club reached second place in the University of Wales league in 1968-69, and the Union also sent a team to the Inter-College Eisteddfod, although it was “not particularly successful in their initial attempt.” A warning in the UWIST prospectus in this period suggests that unacceptable night-time behaviour had been encountered by the authorities. Referring to students’ meetings, entertainments and excursions, an emboldened sentence stated “A ban has been placed on night travel by teams affiliated to the Students’ Union Society.”



One year's Rag float featured student Allan Jones's Austin 7 car. (Joan Mawson)

Students had to be back in Halls or lodgings by midnight, or seek advance permission for a later return, or stay overnight at their destination.

Dances (known as "hops") were popular in the 1960s, as were inter-departmental or staff versus student skittles evenings in local pubs, which apparently usually ended with a hearty sing-song. More formal singing was available by joining a choir: the University one at this time was conducted by Owain Arwel Hughes who went on to be a successful orchestral conductor, and took the Cardiff choir to compete at Swansea University Eisteddfod.

Some pharmacy students saw The Beatles at the London Palladium, and one remembers screaming as part of the mass hysteria! There was also local music through the Jazz Club, and in the Cardiff pubs such as the Woodville and the New Ely. Within the New Building, the College Refectory was licensed for the sale of wines, beer and cider with meals only, but there was always the very popular bar.

Although 1968 was a year which saw a wave of student protests and riots across Europe, that year's UWIST annual report reflected on "the new ethos of "Student participation" now prevalent in Universities, [which had been] achieved within the Institute with a considerable measure of good will and, happily, with the complete absence of the friction which has been the bane of so many institutions."

> **"Anxiety and stress were again in evidence, especially at examination times; these kinds of difficulties appear to be increasing."** UWIST Student Handbook, 1968

The School hosted the BPSA conference in 1986 when Cardiff student Dai John became President. (Shivaun Gammie)

British Pharmaceutical Students' Association

Cardiff students had a close involvement with BPSA. At the 1961 conference, the Cardiff members successfully proposed evening social activities at the next BPSA conference, changing the atmosphere of the event forever! In 1962, the BPSA conference was hosted in Cardiff, and it was reported that Cardiff was one of the pharmacy schools that had 100 per cent membership of BPSA (alongside Bristol, Chelsea, Leicester, Liverpool and Plymouth).

In 1972, Cardiff hosted the BPSA conference again, and staff as well as students played their part, including a discussion on the current pharmacy course. Paul Spencer called for a four year course to allow students time to think, and Professor Cook emphasised the importance of community pharmacy teaching and research, and Continual Professional Development.

In 1978, Paul Mannion, a pharmacy student at the School, was elected BPSA President, the first to serve after BPSA's formal integration as a PSGB branch. Cardiff hosted the BPSA conference in April 1986, with Cardiff student Dai John as BPSA President. Student reports did not dwell on the daytime business, but detailed the social programme including a beachwear party on the first evening, a buffet at Cardiff Castle, trips to night clubs and pubs, and a dinner-dance on the Friday night.

B. P. S. A.
CONFERENCE 1986

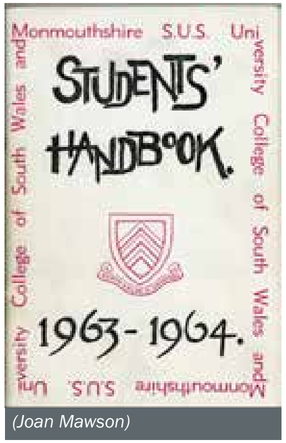
The Welsh School of Pharmacy

LUNCH

Two Cardiff students were amongst the British group heading for the International Pharmaceutical Students' Association conference, featured in The Chemist and Druggist in August 1962. (Chemist + Druggist)

Welsh Pharmaceutical Students' Association

However, the main focus of organised activity within the School continued to be the Welsh Pharmaceutical Students' Association (WPSA). In the 1963-64 *Students' Handbook for the University College of South Wales and Monmouthshire*, WPSA's aims were given as to arrange visits to manufacturers, to arrange outside lecturers on related topics, and to provide sporting and social functions between departments and with other schools of pharmacy. The final aim was, understandably, the most popular: to organise the annual WPSA dinner dance, a highlight of the programme. In 1960 and 1961, the profit made from regular dances held in the New Building was put towards buying a set of rugby jerseys in WPSA colours for the Pharmacy team.


Monmouthshire S.U.S. University College of South Wales and
STUDENTS' HANDBOOK
1963-1964.
Monmouthshire S.U.S. University College of South Wales and

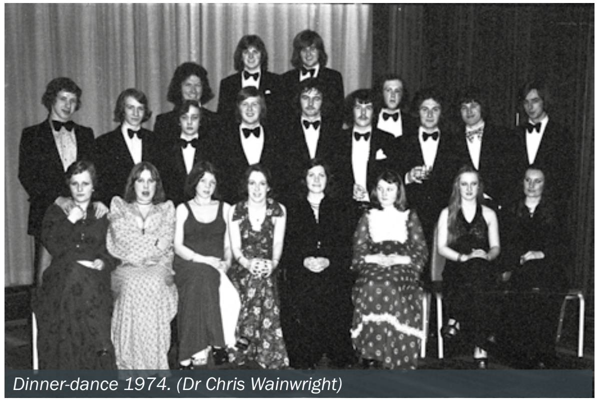
(Joan Mawson)

Staff at the 1960 WPSA ball, grouped around Vernon Lloyd, head of school, wearing white tie. (Joan Mawson)

The intermittent *Pharmag*, WPSA's publication, was usually led by reports of social events and match reports. In the March 1965 edition, having got the usual criticism of lack of submissions out of the way, the editor J. Howard Ryan, presented a magazine with a balance of reports: the Annual University Dance was going to be held in the Old Union, and there were plans for skittles matches and works visits. WPSA teams were joining other Schools of Pharmacy in Birmingham for BPSA seven-a-side rugby and hockey, plus evening entertainment. The upcoming Dinner Dance was presented as the highlight of the year - "it is a really, Big Nite [sic]!" - and there was encouragement to create a decent Pharmacy "dray" for Rag Week, alongside to attend the BPSA conference in London. Of course, the magazine also included more humorous content. A fictional account of a day in the life of A. Frank (Pharmacist), seems very inappropriate today, with the School referred to as if it is a concentration camp, with references to being whipped for trying to escape. The edition also ran more serious accounts: of a trip to Majorca that had been won by Joan Hutchinson (4th Year BPharm) and Jan Jenkinson (Hons Zoology); on "Why International Voluntary Service?" from a volunteer at a work camp held in Cardiff to look after "mentally handicapped children" at a day centre; and on "General Practice of Pharmacy", by June Gatheridge, already qualified and working in community pharmacy. The WPSA Chairman's Chat comments on the success of a talk on birth control by a senior medical officer with the Family Planning Association Clinic, interestingly commenting on the unknown nature of long term side-effects of "the Pill" as it has not been in use for 20 years, and discussion of pre-marital sex which "produced many different points of view." Two lectures had been planned, one on Cancer by Dr Holman, Senior Lecturer in Bacteriology at the Royal Infirmary, and the other to be given by a local Probation Officer.

(Joan Mawson)

> **“[Studying at the School] was essentially the start of everything. School was just getting to the starting line. “B.Pharm. (Wales)” is a large percentage of the description of who and what I am.”** Roger D. Pickett (BPharm, 1965-68)


Dinner-dance 1974. (Dr Chris Wainwright)

Student Meurig Thomas and Terry Turner, Senior Lecturer in Pharmacognosy, 1975 WPSA dinner-dance. (Dr Chris Wainwright)

In the 1970s, the main WPSA events were discos, organising Rag activities and sports fixtures. They were interspersed with the occasional alternative such as the Poems and Pints Evening run in the Staff Dining Club in the Union Building on 20 October 1977, tickets 15p each, and lectures on abortion, first aid and family planning on the programme in 1979. In this period, the WPSA committee included a BPSA rep, a Sports Officer, the Pharmag Editor, a Rag Chairman and the Staff-Student rep. In 1978, the perennial WPSA sweatshirts gained an air of controversy as a vote was proposed over whether their slogan should be in English and Welsh: the bilingual option won. The WPSA committee got involved in a debate with the UWIST Union in 1979 over their “flippant” attitude to drug taking in that year’s Welfare Book. WPSA officially complained, particularly in light of the fact that pharmacists were unable to register if they had a criminal record. They sought assurance that the drugs section of the next edition of the book would be checked by a Pharmacy professor.

The *Pharmag* in November 1979 experienced a delay in publication as it had to be censored by staff (no further details were forthcoming). By the early 1980s, it had developed a strapline: “More dynamic than a BP, lighter than a Martindale, keeps you informed of events at least 6 months after they happen…” However, the content offered the typical fare of social arrangements, sports reports and gossip. In 1983, the social programme went awry with “a few hiccups” including double booking of Nero’s meaning that WPSA had to go on a promotion night: “the Tia Maria flowed as did the games” including hula hooping and press-ups. There were more serious initiatives too including a new Drug Research Society formed in 1985 to organise speakers and trips relating to the pharmaceutical industry. These were sandwiched between a coach to the Bierkellar in Bath, deciding whether to run a cultural trip to Cambridge, Oxford, Bath or Tenby, and a planned ice-skating session. The Pharmacy float won the prize for the best lorry in the Rag Procession in 1985, interpreting the Vikings theme literally by kidnapping a woman and tying her to their mast.

The Twenty-third Schedule

The BP is my shepherd, I’ll not want
It makes me down to lie
In white coats clean, It leadeth me
The sterile waters by
My soul if doth remove from vice
And me to walk doth make
With Good Manufacturing Practice
E’en for Mike Barnett’s sake
…
My ampoules I have duly filled
In presence of our foes
My hands I doth with hibitane anoint
But my autoclave overflows
Good times and money all my life
Shall surely flow from thee
And Lambeth Palace every year
Can gladly have my fee.

(Traditional, revised 1981, *Pharmag)*

A Pharmacy year group photo from the 1980s.

Sport

The School has always been strong and enthusiastic at sport. In fact Pharmacy students got involved at a departmental, Hall and University level. There was lots going on: table tennis, swimming, rugby, hockey, squash, fencing, athletics, cross-country running, lacrosse and football. And of course, plenty to watch including Test Matches, a memory of seeing Stanley Matthews playing for Stoke against Cardiff, and rugby at The Arms Park. Alumnus Mike Allwood recalled that international rugby match tickets were readily available and cheap in the early 1960s.

But the students' own achievements were not always consistent. In 1965, it was reported that Pharmacy had played against the University 3rd XV, and Bristol School of Pharmacy, and had lost both matches: "Again in the evening all members of the team excelled and I'm sure that the amount of beer consumed compensated..." They followed these matches with further losses against the Catholic Society, Biochemistry XV, and the Chemistry Society. The report in *Pharmag* concluded: "Although at first glance the record of the team is not very impressive, there is hope that this term "the rub of the green" will be in our favour. So all you fans keep your eyes pinned to the noticeboard for our first victory. It might be against Cathays Girls School, but a taste of victory is all we need!!"

This appears to have been a "blip." In 1967, Cardiff won the BPSA Unichem cup (seven-a-side rugby) and Allenbury's cup (six-a-side ladies' hockey), held at the University of London School's Myddleton House ground in Enfield in front of about 400 student supporters from pharmacy schools in England and Wales. They swept the board in the BPSA and UCAL cups again in 1971.

The only possible recorded anxiety about pharmacy students' focus on sport appears in the UWIST annual report of 1970-71 when "some slight cause for concern" was expressed about the "comparatively high wastage rate in the examinations" in first and second year students. Although not explicitly blamed on participation in sport, the implication is that more concentration on studying would help to remedy the situation.

Student Chris Wainwright's first attempted flight on pioneer Geoff McBroom's Rogallo hang glider in 1973. Wainwright and Jim Furr, Lecturer in Microbiology, bought and tried out the first hang glider in Wales through the UWIST Aero Club. (Dr Chris Wainwright)

In 1975, Cardiff won the BPSA rugby championship against Bradford and the Victor Ludorum cup for BPSA sports day. The School was dominant in these competitions, winning the BPSA sports finals and Victor Ludorum trophy in Edinburgh in 1979, the national Unichem "seven-a-side rugger trophy" against Portsmouth in 1979, and the NPA Victor Ludorum cup again at the BPSA annual sports finals in 1980. This included victory in the indoor sports of mixed darts, dominoes, draughts and cribbage. A humorous report of the event in the WPSA minutes suggested that the rugby team should invest in their own first aid kit, due to the level of their injuries. The WPSA entry in the UWIST Student Union handbook for 1980-81 emphasised this achievement, and stressed that they had a new female sports officer who was trying to increase involvement in netball and hockey. The focus of the entry was clear: "The association, better known as WPSA, provides sports and social events for tired, overworked students of the best school of pharmacy in the country – there being only one in Wales." WPSA won the BPSA Victor Ludorum again in 1981, 1982, 1986 and in 1987, with individual prizes in rugby, netball, men's squash and ladies' squash.

There was another blip in 1983 when the BPSA sports finals at Nottingham clashed with Wales v England International at Twickenham, so even though the School were defending their titles in football, rugby and hockey plus the Victor Ludorum trophy, they were unable to field strong teams and had to hand back all of the cups!

Cardiff football team at the BPSA Western Area Conference, Bath 1986/7. (Dai John)

The sports reports are one of the highlights of *Pharmag*. In 1984, the Cardiff football team sent to play against Leicester was described as one goalkeeper, two footballers and nine rugby players. Leicester "had obviously seen a round ball before" and won. In 1985, with Cardiff hosting Liverpool, Leicester, Portsmouth, Aberdeen and Bath for the BPSA Sports Final, Liverpool's Rugby Sevens team played wearing tuxedos and dresses "and even scored a try in one game." Cardiff's mixed hockey team came fifth out of six: "this was believed to be a ploy to get to the Beer tent before it closed."

> **“UWIST is full of knowledge. The first years bring a little in and the third years take none away and knowledge accumulates.”** *Pharmag*, 1985

Emeke Nwajiobi (left) 1984. (Chemist + Druggist)

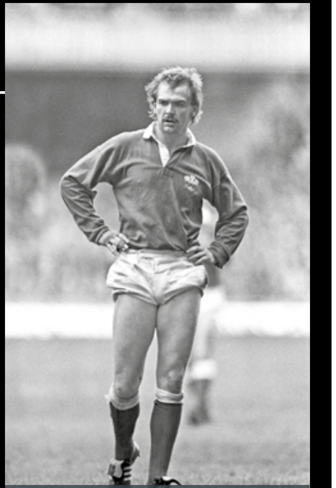
WPSA frequently won the Victor Ludorum trophy at the BPSA Sports Weekend, here in 1975. (Chemist + Druggist)

Individual pharmacy students also excelled including Martin Gravelle who was selected to tour Australia with South Wales Cricket Association during December and January of his first year in 1978, following his captainship of the Welsh Secondary Schools’ team in 1976 and 1977. In 1983, recent pharmacy graduate Emeke Nwajiobi, originally from Nigeria, took up a place in the Luton Town football team. He had played for England schoolboys, UWIST, Welsh Universities and British Universities. He went on to play for the Nigerian national side four times including in a World Cup qualifier against Tunisia in 1985, coached the Nigerian national team for a short time in 1985, and returned to pharmacy only when he retired from football following injury in 1987.

In March 1984, The Chemist and Druggist reported the School’s shock defeat by Winpharm Rugby Union Enthusiasts Society XV, 29-14. (Chemist + Druggist)

> **“Cardiff was a great place to live and study pharmacy. It was such a progressive course with clinical and social studies and at the weekend we would watch the great rugby side of JPR Williams from our attic, which overlooked Cardiff Arms Park.”**
> Mahesh Shah, student in 1970s, Executive Chair of Proteinlogic

Gareth Roberts



George Herringshaw. www.sporting-heroes.net

Gareth Roberts graduated from UWIST and registered as a pharmacist in 1981. Already a talented rugby union player, he captained the Welsh Schools rugby team which toured New Zealand in 1977. Whilst at the School, he was a member of the team that won the 1980 university championship. He joined Swansea RFC in 1977 making 185 appearances, before moving to Cardiff in 1984 playing 166 times.

He was chosen for the Welsh national squad in 1980, but partly due to injury, did not receive his first senior cap until 1985. He went on to make seven appearances between 1985 and 1987. He also played for the Barbarians. During this period, he was also working as a community pharmacist in Swansea. He was in the Wales squad for the first Rugby World Cup in 1987, scoring two tries.

Linda Stone (née Gordon)

Royal Pharmaceutical Society Museum

Linda Stone registered as a pharmacist in 1973, returning to Cardiff after her pre-registration year in her home town of Leeds. She started her career as a community pharmacist, and became the youngest ever chair of a PSGB local branch in 1975 when she was elected chair of the Gwent Branch. She also served as President of the National Association of Women Pharmacists, and of the Manchester Pharmaceutical Association.

She became the youngest ever woman to be elected to PSGB Council in 1981, and also the first woman to have a child after being elected to Council. She was President and Treasurer of the Royal Pharmaceutical Society, also serving as Chair of its Education Committee, and later a pharmaceutical consultant, whilst also holding positions including Pharmacist Member of the Investigating Committee of the General Pharmaceutical Council, Independent Pharmacist Member of the Appeal Board of the Prescription Medicine Code of Practice Authority, lay member of the General Dental Council, and Lay Vice Chair of the Qualifications Committee of the Bar Standards Board. She was Vice President of FIP from 2002 to 2010, and designated a Fellow in 2010.

She has served as a magistrate since 1993. In the same year she was elected as a RPSGB Fellow, and was awarded an OBE in 2004, when she was also awarded the RPSGB Charter Gold Medal, its highest award.

Welsh School of Pharmacy Past Students' Association

In March 1986, the inaugural meeting of the Welsh School of Pharmacy Past Students' Association (WSPPSA) was held, with the aim of continuing contact between past students and the School. A working party consisting of Peggy Baker, Alan Crabbe, Shivaun Gammie, June Jenkins, Peter Jenkins, Dai John, Mike Price and Terry Turner worked to re-establish the previous past students' group which had folded in the 1970s. Professor Paul Spencer was elected an honorary member and President. The working party went on to become the first committee with the founding Chairman Dai John, who had served as WPSA Chair and BPSA Chair whilst a student at the School.

Membership was initially small with only five members at the first AGM, held at the Royal Hotel, Cardiff in March 1987. A subsequent medieval banquet in Cardiff Castle to launch the Assocation, was well attended, but interest only grew gradually. An Extraordinary General Meeting in 1988 agreed that "The aim of the association shall be to promote the continuing contact and communication of former students of the Welsh School of Pharmacy with each other and with the School to seek to improve the professionalism and to support the continuing postgraduate education of its members."

The inaugural past versus present rugby match for the R. Vernon Lloyd Shield was held on 18 March 1989. Vernon Lloyd had died the previous year, with the shield bought in his memory, and for successive years, the present students won decisive victories.

The wider pharmacy community

The School continued to be heavily involved in the wider pharmacy community, with mutual benefits.

Pharmacy staff were an integral part of the PSGB local branch system. It was reported in 1965 that in the past three years, four staff members had been branch chairmen, and others had held additional officer posts. Staff also gave talks at Cardiff and other South Wales branches throughout the 1960s.

> **"They [Pharmacy staff] carry the maxim of service to the pharmaceutical community beyond the four walls of the college. They are constantly available to advise their professional colleagues on such topics as pharmaceutical specialities, formulation, forensic pharmacy, historical data, and the availability of post-graduate apprentices."** Terry Turner, 1965

In May 1965, the British Pharmaceutical Conference was held in Cardiff for the third time in its history, with the School used for a significant number of its activities and sessions. Alongside the refreshments being served by "attractive young ladies in Welsh national costume" (apparently the daughters of local committee members), the report in *The Chemist and Druggist* remarked on how the "modern college building...drew praise - and a little envy – from some who remembered the less satisfactory conditions and buildings that had obtained at Cardiff in their student days." With around 750 pharmacists attending, Cardiff pulled out all the stops including a special arrangement for some of the public buildings such as Cardiff Castle to be floodlit for the week.

Staff also contributed to national PSGB events. For example, Terry Turner gave a paper at a PSGB evening meeting in London in 1971 on pharmaceutical applications of plant tissue culture.

In 1979, the PSGB Council gave an additional grant to Cardiff and South Glamorgan branch to cover expenses for a joint meeting with WSP students, but it was reported rather pointedly that "it will be emphasised to the branch that every effort should be made to plan activities within its budget." During the 1980s and 1990s, School staff held Chair and Vice-Chair posts almost continually: David Luscombe as Chair in 1983-4, Sarah Cockbill from 1985-7, Terry Turner as Vice-Chair in 1990-91, Dai John as Chair in 1992-3. This inevitably kept the relationship between the School and the branch close. Branch meetings were frequently held in the Redwood Building, and joint events were common, particularly as the first event of the academic year. For example, in 1981 a joint barn dance was held, and in 1990, a 'Sorcerers and Apprentices' night was held to introduce new first year students to the branch. On 11 May 1979, Gordon Appelbe gave a joint lecture, and on 23 February 1993, a joint meeting was held with WPSA with RPSGB President David Coleman speaking on current pharmacy topics.

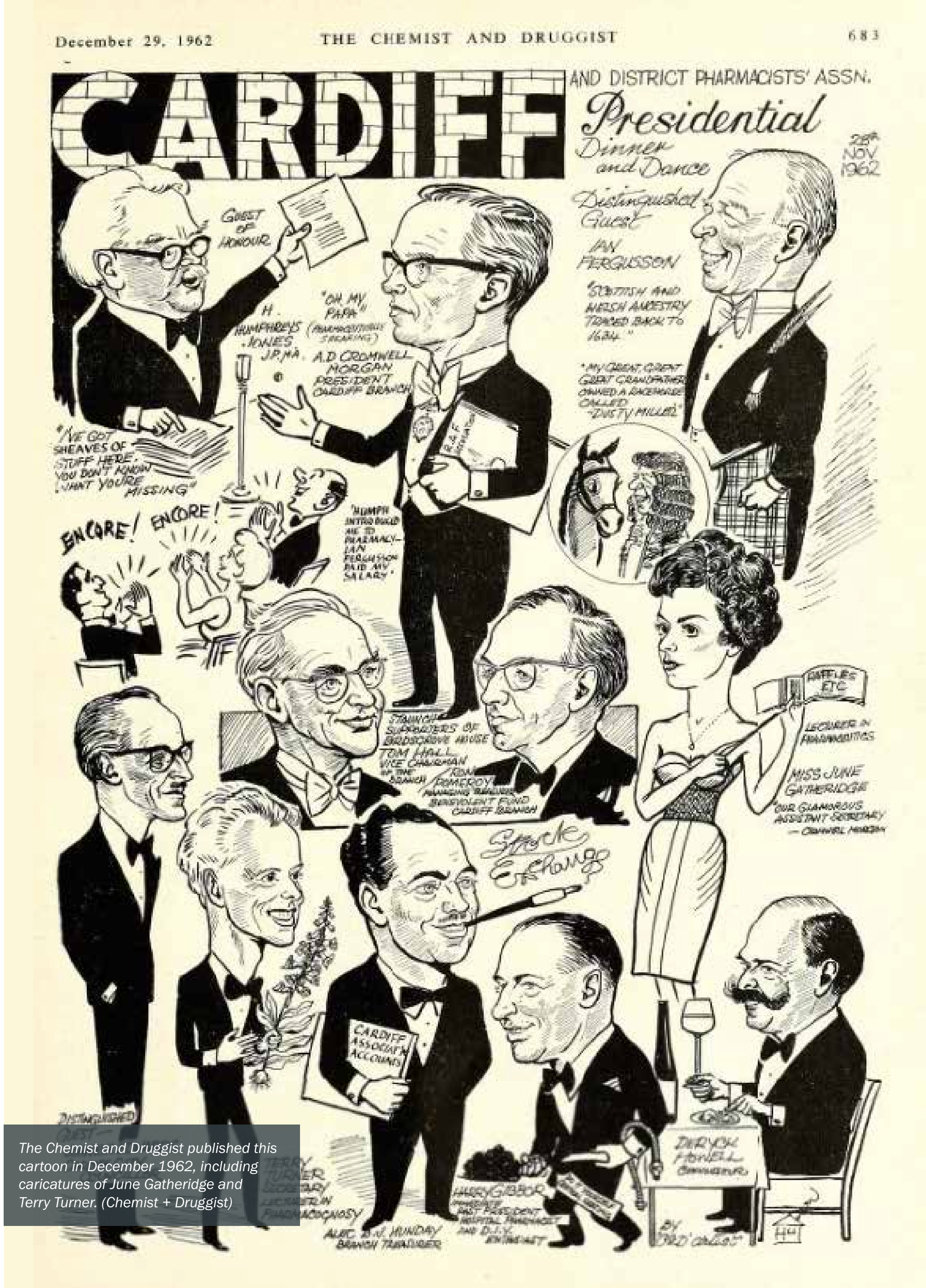
Staff also played a part in many other professional bodies. In 1969, Dr K. C. James was elected a member of the Society of Cosmetic Chemists. Professor Cook was appointed British Academic Representative on the Franco-British Pharmaceutical Commission, and Chairman of the Pharmaceutical Group of the Royal Society of Health, an organisation he went on to chair. He was also a member of the PSGB Education Committee, and Chairman of its Rhanbarth de Cymru. The latter was a new development, a PSGB regional body for South Wales, following a nationwide initiative to bring PSGB branches into area groupings. The following year, a new General Pharmaceutical Committee for Wales was established to liaise directly with the Welsh Office, which had taken over administration of Health Services in Wales. Calls developed during the 1970s for an independent Welsh Health Service, within the context of discussions around the establishment of an independent Welsh Assembly. Although this was more than 20 years off, in 1976 the PSGB Council proposed a Welsh Executive for pharmacy. The first election attracted 26 candidates with two members of School staff, Terry Turner and Archie Cook, being elected into the top two places. Paul Spencer also served as Chair of the General Pharmaceutical Committee for Wales in 1984.

The School also made many international connections in this period, starting with small steps. The UWIST annual report for 1969-70 includes mention of Dr A. D. Russell being awarded a Wellcome Travel Grant to visit and lecture at pharmacy schools in the USA, C. Clarke and R. J. Ingram making VISTA secondments to the University of Ife in Nigeria, and Professor Cook visiting the University of Science and Technology in Kumasi, Ghana, as an external adviser. Overseas visitors to the School that year included L. Wheeler, Research and Development Director from Parke Davis Inc., Professor Whitehouse of the University of California, the Dean of the Faculty of Pharmacy from the University of Ife, Nigeria, and the Vice-Dean of the University of Melbourne. By 1985, the School and various local hospitals were hosting eight Kuwaiti pharmacists following a visit by Dr David Bailey to Kuwait. Perhaps their most memorable experience was seeing snow for the first time.

Continual Professional Development

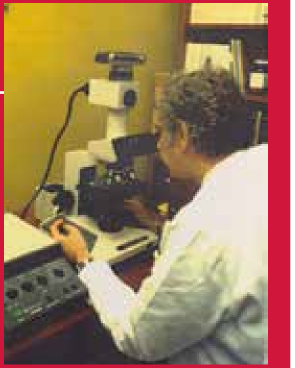
The School was also a significant pioneer in what today we call Continual Professional Development, making good use of its close connections with the local pharmacy community. A piece in the *Pharmaceutical Journal* in July 1961 described "extension courses" on pharmacology to be organised by the Branch and held at the School on Thursday evenings. In 1963, a new course on Radioactivity and the Pharmacist was launched, to run over 6 weeks on Thursday evenings, with a fee of £1 10s (£1.50) for the full course. Prescient, although unfulfilled, proposals were made for a diploma in Hospital Pharmacy in 1964, and an MPharm in Industrial Pharmacy in 1965.

In 1967, the School hosted a pharmacists' weekend school at Aberdare Hall, building on previous shorter initiatives. The reports noted that one of the delegates, now at Birmingham Hospital, was the first pharmacy student admitted to Aberdare Hall, Miss M. K. Ridsdale who qualified in 1961. School staff contributed sessions including A. D. Russell on products requiring preservatives, M. Barnett on 'Packaging with Reference to General Closures and Containers for Injectable Solutions' and N. A. Armstrong on 'Uses of Plastics in Pharmaceutical Containers.'


December 29, 1962
THE CHEMIST AND DRUGGIST
683
CARDIFF
AND DISTRICT PHARMACISTS' ASSN.
Presidential Dinner and Dance
28th NOV 1962
GUEST OF HONOUR
H. HUMPHREYS JONES J.P. MA.
"OH MY PAPA" (PHARMACEUTICALLY SPEAKING)
A.D CROMWELL MORGAN PRESIDENT CARDIFF BRANCH
Distinguished Guest
IAN FERGUSSON
"SCOTTISH AND WELSH ANCESTRY TRACED BACK TO 1634."
"MY GREAT, GREAT GREAT GRANDFATHER OWNED A RACEHORSE CALLED "DUSTY MILLER""
"I'VE GOT SHEAVES OF STUFF HERE. YOU DON'T KNOW WHAT YOU'RE MISSING"
ENCORE!
ENCORE!
"HUMPH INTRODUCED ME TO PHARMACY - IAN FERGUSSON PAID MY SALARY"
STAUNCH SUPPORTERS OF BRIDGROVE HOUSE
TOM HALL VICE CHAIRMAN OF THE BRANCH
RON POMEROY MANAGING TREASURER BENEVOLENT FUND CARDIFF BRANCH
RAFFLES ETC
LECTURER IN PHARMACEUTICS
MISS JUNE GATHERIDGE
"OUR GLAMOROUS ASSISTANT SECRETARY" — CRANWELL MORGAN
Stock Exchange
CARDIFF ASSOCIAT'N ACCOUNTS
DISTINGUISHED GUEST
TERRY TURNER SECRETARY LECTURER IN PHARMACOGNOSY
ALEC. D.W. MUNDAY BRANCH TREASURER
HARRY GIBBOR IMMEDIATE PAST PRESIDENT HOSPITAL PHARMACIST AND D.I.Y. ENTHUSIAST
DERYCK HOWELL CHAIRMAN
BY FRED' CALLOW
HW

The Chemist and Druggist published this cartoon in December 1962, including caricatures of June Gatheridge and Terry Turner. (Chemist + Druggist)

Mike Barnett
1937-2000



Mike Barnett studied at the School, and was WPSA Chairman in 1957-8 and WPSA Treasurer in 1958-9. After registering as a pharmacist in 1960, he gained MPharm and PhD degrees, and also qualified as a chartered chemist, becoming a member of the Royal Society of Chemistry (RSC).

He spent his whole career on the School's staff from Lecturer in Pharmaceutical Technology in 1959, then Senior Lecturer in Phamaceutics, and Senior Research Fellow from 1993. He was also a Visiting Professor in the Pharmaceutics Department at Uppsala University, Sweden, from 1976, and also worked as a consultant to a Swedish pharmaceutical company.

He was heavily involved in the wider pharmacy profession, firstly as chairman and secretary to the PSGB Monmouthshire and Newport branch in the 1960s. He served on the PSGB Welsh Executive for 12 years from 1987, as Vice-Chairman and then Chair for three years from 1992. He was a member of the UWIST senate and its council, and also of the senate of the University of Wales College of Cardiff. He was chair of both the School's Postgraduate and Undergraduate Boards of Studies in Pharmacy. He was designated a PSGB Fellow in 1995 for distinction in the profession of pharmacy.

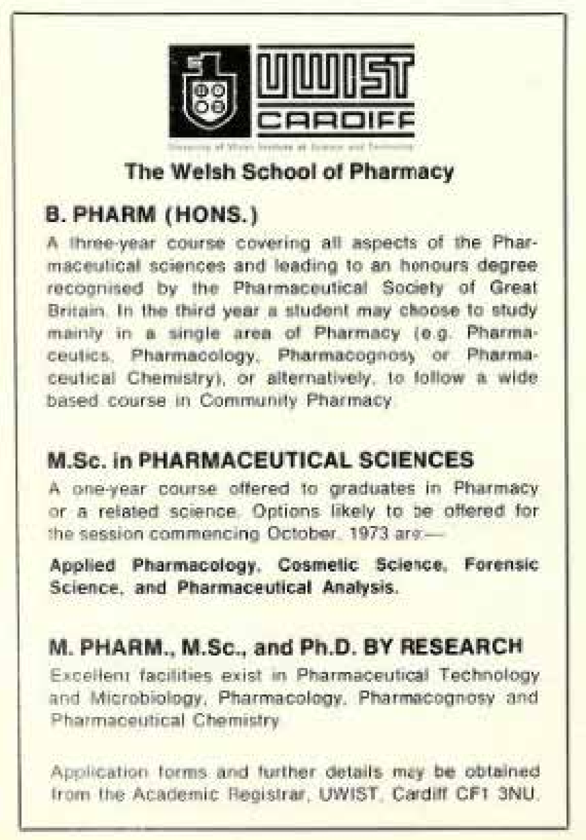
His research interests were formulation problems, specifically particle size analysis. He was Chairman of the RSC particle size characterisation group, and of the pharmacy group of the European Society of Parenteral and Enteral Nutrition in the early 1990s. He served on the *British Pharmacopoeia's* working party on particulate contamination in intravenous fluids for a number of years.

From 1968, pharmacists (as well as doctors and dentists) became eligible for grants for postgraduate education. The Welsh School was one of four schools asked by the PSGB to participate in pilot schemes which in Cardiff included revision classes in pharmacy legislation, working with the local branches to allow the contribution of experienced members, and a short revision course for hospital pharmacists in the summer vacation in cooperation with the Welsh Hospital Board. The same year saw a new Careers Convention with experts from different branches of the pharmaceutical profession invited to address the pharmacy undergraduates. Its success led to the County Youth Employment Officer requesting it be repeated for Sixth Form students in 1969/70. In 1968, the first weekend conference of the newly-formed British Society for the History of Pharmacy was held at the School, hosted by Terry Turner. The following year a three day colloquium was held for teachers, organised with the PSGB with over 150 delegates. In 1971, a course on drugs for school teachers, organised with the City of Cardiff Education Committee attracted 30 attendees.

On 16 Feburary 1969, the School held a joint meeting between the Cardiff Branch, the PSGB and the National Pharmaceutical Union in the UWIST Great Hall. James Callaghan, Home Secretary (and later Prime Minister) gave a speech about a new bill to tackle drug abuse to the audience of 500 students and pharmacists, and subsequently toured the School of Pharmacy. It was reported as an historic occasion, the first time that a Cabinet Minister had addressed pharmacists in Wales.

In 1970, Dr Tony Armstrong supervised the first week-long veterinary pharmacy course jointly organised by the School and Monmouthshire College of Agriculture at Usk. The attendees spent three days at each centre, concentrating primarily on animal diseases and treatment in Usk, and on formulation, stability, packaging and legal and safety considerations in Cardiff. The course ran again as a four day programme in July 1973, looking at animal husbandry, modern farming methods, and treatment of mastitis, internal parasites and coccidiosis, all for a fee of £50 including all meals and accommodation.

In 1972, the first of a popular short course "Preparations for the hair" was run by the School. In the same year, a postgraduate course for general practice pharmacists attracted 46 delegates. Staff recognised that the explosion in therapeutics meant that regular refresher courses for practicing pharmacists were becoming ever-more important, and that the current range and availability of courses did not meet this need.



UWIST CARDIFF

The Welsh School of Pharmacy

B. PHARM (HONS.)

A three-year course covering all aspects of the Pharmaceutical sciences and leading to an honours degree recognised by the Pharmaceutical Society of Great Britain. In the third year a student may choose to study mainly in a single area of Pharmacy (e.g. Pharmaceutics, Pharmacology, Pharmacognosy or Pharmaceutical Chemistry), or alternatively, to follow a wide based course in Community Pharmacy.

M.Sc. in PHARMACEUTICAL SCIENCES

A one-year course offered to graduates in Pharmacy or a related science. Options likely to be offered for the session commencing October, 1973 are:—

Applied Pharmacology, Cosmetic Science, Forensic Science, and Pharmaceutical Analysis.

M. PHARM., M.Sc., and Ph.D. BY RESEARCH

Excellent facilities exist in Pharmaceutical Technology and Microbiology, Pharmacology, Pharmacognosy and Pharmaceutical Chemistry.

Application forms and further details may be obtained from the Academic Registrar, UWIST, Cardiff CF1 3NU.

The Chemist and Druggist, 18 November 1972. (Chemist + Druggist)

In November 1969, George Thomas Secretary of State for Wales visited the School and gave a lecture on 'The future of the Pharmaceutical Services in Wales'

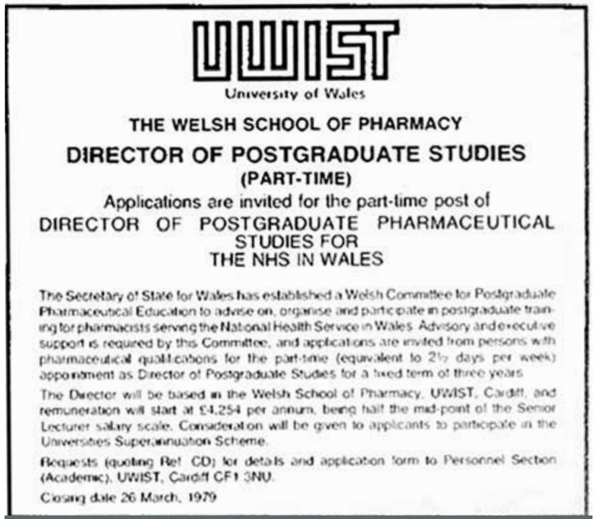
In the summer of 1978, the Secretary of State for Wales announced his intention to set up a Welsh Committee for Postgraduate Pharmaceutical Education (WCPPE). Its aim would be to rationalise continuing education in Wales, avoid duplication of effort, and base all programmes on latest developments, with training provided for both hospital and retail pharmacists. Funding would come directly from the Welsh Office, and would be channelled through the Committee with its Director and office based at the School.

The first WCPPE meeting was held in January 1979, with John Hough as part-time Director of Postgraduate Pharmaceutical Studies. When Hough had to stand down due to ill health later in the year, David Bailey, the School's Senior Tutor, took up the post. The WCPPE immediately produced a very active programme, with regular events listed in the pharmaceutical press, and a library of published material, references and reports, tape slide packages and videos established for Welsh pharmacists to borrow. In 1984, Professor Ian Kellaway was elected WCPPE chairman alongside his role as Professor of Pharmaceutics at the School, and in 1986, David Temple was appointed as the first full-time Director of Postgraduate Pharmaceutical Studies following increased funding from the Welsh Office.

Meanwhile, the School started to develop a number of taught postgraduate courses, building on an initial offering from 1969 of short courses in Hospital Pharmacy and Veterinary Pharmacy, with 36 delegates taking the Veterinary course in 1970 and 70 students on the Hospital course in the same year. UWIST's Committee of Deans supported these developments, and regulations and a curriculum was drafted for an MSc with options in Cosmetic Science, Applied Pharmacology, Forensic Science and Pharmaceutical Analysis. With Cosmetic Science and Applied Pharmacology Masters courses unique to UWIST, they hoped to corner the market. The new MSc courses were launched for the 1972-3 academic year with a sessional fee of £93.90, and the possibility of taking the course over one or two years. Three students enrolled in the first year, alongside 14 delegates for the two short courses. From 1978, the School offered a course for physicians employed in the pharmaceutical industry to sit the Royal College of Physician's Diploma in Pharmaceutical Medicine. It was a two year part-time programme run in conjunction with the British Association of Pharmaceutical Physicians, and attracted around 100 delegates both British and European through the 1980s and into the early 1990s.

In 1985, it was announced that a Postgraduate Diploma in Clinical Pharmacy for junior hospital pharmacists was being established by the School, jointly with the Southern Derbyshire Health Authority. It was the first postgraduate qualification in clinical pharmacy in the UK. The relationship with Derbyshire Royal Infirmary had started in 1982 when several DRI staff studied for higher degrees at the School. In 1985, the School also established a satellite unit of its Medicines Research Unit within the DRI, which provided staff accommodation, teaching and research facilities for pharmaceutical staff at the hospital, including for visiting workers from Cardiff. With the South Derbyshire District Pharmaceutical Officer as Associated Director of the Unit, the move anticipated the Nuffield Report recommendation that schools of pharmacy and health authorities should work closer together.

In the same year, University College Cardiff offered pharmacists and other healthcare professionals a two year part-time course leading to an MA in the philosophy of healthcare, claimed to be the first of its kind in Europe. Two years later, in 1987, an MSc programme in Clinical Research was established in collaboration with the Association for Clinical Research in the Pharmaceutical Industry, and again promoted as the first course of its kind in Europe. In the same year, a Master of Law degree in legal aspects of medical practice was set up at University College Cardiff. Open to pharmacists and other health professionals, and taught over nine residential weekend seminars plus a dissertation, there were three pharmacists in the first cohort.



UWIST

University of Wales

THE WELSH SCHOOL OF PHARMACY

DIRECTOR OF POSTGRADUATE STUDIES

(PART-TIME)

Applications are invited for the part-time post of

DIRECTOR OF POSTGRADUATE PHARMACEUTICAL STUDIES FOR THE NHS IN WALES

The Secretary of State for Wales has established a Welsh Committee for Postgraduate Pharmaceutical Education to advise on, organise and participate in postgraduate training for pharmacists serving the National Health Service in Wales. Advisory and executive support is required by this Committee, and applications are invited from persons with pharmaceutical qualifications for the part-time (equivalent to 2½ days per week) appointment as Director of Postgraduate Studies for a fixed term of three years.

The Director will be based in the Welsh School of Pharmacy, UWIST, Cardiff, and remuneration will start at £4,254 per annum, being half the mid-point of the Senior Lecturer salary scale. Consideration will be given to applicants to participate in the Universities Superannuation Scheme.

Requests (quoting Ref. CD) for details and application form to Personnel Section (Academic), UWIST, Cardiff CF1 3NU.

Closing date 26 March, 1979

Advert for the first director, March 1979 (Chemist + Druggist)

"I think probably the most important aspect of my time at the School of Pharmacy was the instilling of an attitude of professional honesty and commitment, understanding the responsibilities this implies for the care and well-being of your patients, either by direct contact or through involvement in delivering better healthcare within one's own sphere of practice.

So thank you Cardiff, for the scientific and professional education you gave me which has ensured a fulfilling and successful career." Mike Allwood, 1961

A human respiration and cardiovascular experiment in the Applied Pharmacology Laboratories, 1982. (Glamorgan Archives)

CHAPTER **SIX**

6

“Working at the frontiers of knowledge”

1988-2019

Arguably the most significant political development during this period was the devolution of government across the four nations of the United Kingdom. In Wales, the National Health Service became the responsibility of the Welsh Cabinet Secretary in 1999 and, with a devolved Welsh Assembly from 2007 and direct law-making powers from 2011, it developed somewhat differently from the other home countries. Significantly for Welsh pharmacy, in January 2007 all prescriptions were made free of charge, and a minor ailments scheme - implemented largely by pharmacists - was introduced in 2013.

This devolution in government was also reflected by the Royal Pharmaceutical Society (RPSGB) which established Welsh, English and Scottish boards in 2005. The Society underwent further significant change as a result of the Health and Social Care Act 2008 which enabled the General Pharmaceutical Council (GPhC) to be established in September 2010 as the regulatory body for the profession, separate from the Royal Pharmaceutical Society.

During this period, the University also experienced significant change. Due to financial cuts to universities nationally in the early 1980s, University College Cardiff (UCC) merged with UWIST on 26 September 1988 to form the University of Wales College of Cardiff (UWCC). The School of Pharmacy's 280 students formed its largest single science department. This new institution remained part of the University of Wales and, with around 9,000 students, became one of the UK's largest universities.

The Welsh School of Pharmacy formed one of seven independent schools in UWCC's Faculty of Health and Life Sciences with Paul Spencer, the School's Head, serving as the Faculty's first Dean. He felt that the School would benefit from closer association with other research areas in the Faculty and the opportunity for additional space: "the Welsh School of Pharmacy experiences some overcrowding, and looks forward to major increases in accommodation devoted to research." By 1990, the School expanded to occupy nearly half of the Redwood Building.

Having changed its public name to Cardiff University in 1999, in 2003 a merger with the University of Wales College of Medicine was announced, creating Wales' largest university. The merger occurred in 2004 and, with the approval of a new Supplemental Charter by the Privy Council in December 2004, Cardiff University became a legal entity, independent of the University of Wales. The Welsh School of Pharmacy became one of 29 academic schools within the new institution.

Paul Allan captured the Redwood Building in this watercolour in 1995. (Paul Allan)

During the early years of the twenty-first century, pharmacy as a profession was recognised as having a skills shortage nationally leading to a government-supported increase in MPharm numbers. This included a much more strategic effort to seek international students, which also enabled schools to increase income. In 2009 the School celebrated 90 years of history, within a more complex and dynamic environment than ever before and, two years later, the School's name was officially changed to the Cardiff School of Pharmacy and Pharmaceutical Sciences.

The following year, in 2012, Cardiff University established the College of Biomedical and Life Science. The College continues to comprise the School of Pharmacy and Pharmaceutical Sciences together with the Schools of Biosciences, Dentistry, Healthcare Sciences, Medicine, Optometry and Vision Sciences, and Psychology. By bringing together the University's health and biomedical disciplines, the aim was to increase opportunities for better collaboration in education and research. There was an ambition for pharmacy, nursing and medical students to work more closely together, with this 'inter-professional working' aimed at improving patient care.

Today, inter-professional learning remains a key tenet of the School's education provision. Since the role of pharmacy and its place in society has also continued to develop, so too has the education provided by the School. Now, an increasing number of qualified pharmacists prescribe medicines independently of a doctor, some work within hospitals as part of multidisciplinary healthcare teams, and others are embedded in general practice surgeries making decisions about patients' therapeutic needs. Within a community setting, pharmacists provide consultations before offering advice and guidance to patients.

Despite the various political and structural changes during this period, Cardiff University's School of Pharmacy and Pharmaceutical Sciences' educational mission has remained unchanged: "to deliver an inspiring and transformational learning experience informed by external stakeholders, research and pedagogic scholarship and one that enhances the development, achievement and opportunities of a diverse body of learners who share the responsibility for their educational experience."

Redwood Building, 2013.

Courses

Meeting the challenges of the University's institutional developments ran alongside adapting to major national change in undergraduate pharmacy courses during this period.

The Nuffield Foundation Pharmacy Inquiry ('Nuffield Report') published in 1986 had a significant impact on the advancement of the profession and initial pharmacy training (see chapter 5). The report concluded that "the pharmacy profession has a distinctive and indispensable contribution to make to healthcare that is capable of still further development."

Recognising pharmacists as highly qualified professionals who could provide sophisticated pharmaceutical services and patient-centred care, the report signalled a shift towards an increased focus on clinical pharmacy and skills in pharmacy training.

In a *Pharmaceutical Journal* article in July 1990, Professor Spencer outlined the School's courses, describing them as a "conventional three-year full-time programme, heavily weighted towards the three principal pharmaceutical sciences." However, he also stated that the School was among the first to recognise the growing importance of clinical and professional topics which now provided 12 per cent of the 'core' programme from first year to graduation: "Communication skills tuition, contact with patients and experience on local professional premises have all been features of the course for more than a decade." The article stressed Professor Spencer's hope that a promised extension of the course by two years would allow for teaching in professional pharmacy premises "balancing theory with experience, laboratory versus real-life skills." Within the context of uncertain funding for higher education, the article expressed the aspiration that the government would prioritise its funding.

Welsh School of Pharmacy graduates in 1994, with Professors Nicholls and Spencer centre back. (Dai John)

THE WELSH SCHOOL OF PHARMACY
Terry Turner speaking at the opening of the first history exhibition of artefacts in the building in the 1980s.

Cardiff's strong emphasis on education in pharmacy practice continued during the 1990s. The School had a long-standing communication skills course for all final year undergraduates covering the principles of interpersonal communications and the social skills required for informing patients and responding to their symptoms.

In 1994, the undergraduate Pharmacy course was organised around four disciplines: Pharmaceutical Chemistry (with Pharmacognosy), Pharmaceutics (with Microbiology), Pharmacology (with Therapeutics and Toxicology) and Clinical Pharmacy. In the first year, students took Pharmaceutical Chemistry (including basic biochemistry of plants and animals), Pharmacology (including normal physiology and pathophysiology), Pharmaceutics (including basic microbiology) and Clinical and Professional Studies. The second year course covered Pharmaceutical Chemistry (including Pharmacognosy), Pharmacology (including Pharmacodynamics, Pharmacokinetics and an introduction to Therapeutics), Pharmaceutics (including the design of dosage forms) and Clinical and Professional Studies. The third and final year comprised modules in Clinical Pharmacy and in the Pharmaceutical Sciences, plus a major individual research project. The number of undergraduates in

> **"The strength and responsibilities and furtherance of any profession are inextricably linked to the continuing viability of its education resources."**
> Professor Paul Spencer, 1990.

this period stayed at the same level as the early 1980s, with 96 admitted into each year, including around 12 overseas students.

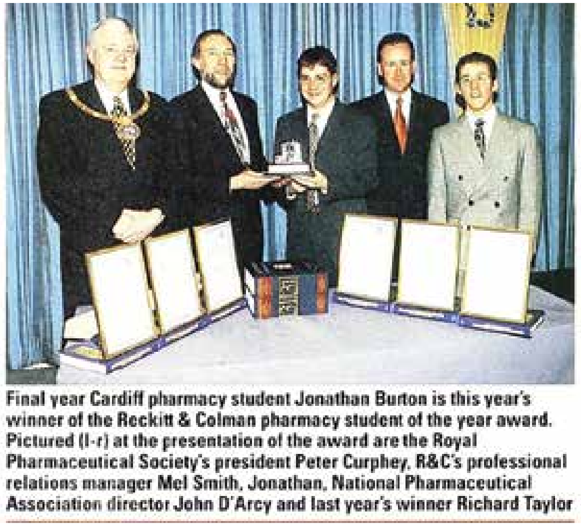
In March 1996 the Welsh School was the first UK School of Pharmacy to be subjected to the new Higher Education Funding Council (HEFC) inspection of its BPharm course and in 1997 the School achieved an ‘excellent in teaching’ result, the highest grading, categorised as “worthy of recognition and reward.” The report identified the School’s strengths as good core and specialist teaching of the full pharmaceutical knowledge base, as well as teaching strategies that were consistent with UWCC’s overall mission and that of the pharmacy school itself. It also noted that there was strong and effective support for students, and a committed and motivated staff, both of which were greatly appreciated by the students themselves. The academic and professional environment was of a high standard, with comprehensive provision of practical and lab classes, interesting and innovative developments in the use of technology, and well-structured teaching. The report requested a specific focus on the generic skills developed by students, and noted that the proportion of students gaining first class degrees was at a similarly low level to other pharmacy schools. Cardiff alumni’s RPSGB Registration exam pass rates and results were noted to be higher than average.

From October 1997, a four-year MPharm course was introduced nationally, with the last cohort graduating from the BPharm in Cardiff in 1999. The four-year course was introduced partly to match pharmacy education and training across Europe, and partly to accommodate the extended curriculum recommended by the Nuffield Report. Paul Spencer, Head of School, described himself as a “fervent supporter” of this development, writing a ‘Broad Spectrum’ piece for the *Pharmaceutical Journal* to outline his thoughts in February 1997 in which he acknowledged the harmonisation with European degrees, and increased time to teach pharmaceutical science, employ a full range of learning methods and incorporate new subject areas. At Cardiff, more specifically this meant further development of interdisciplinary teaching, more time to deal with perceived inadequacies in first year students’ science knowledge, a concentration on individual dissertations and projects based on problem-solving skills, and an increased emphasis on computer-assisted learning.

The new fully modular MPharm syllabus at Cardiff was agreed by the RPSGB Council in April 1997, with 12 modules per year. The promotional listing in the *Pharmaceutical Journal* for that year stated: “The major objective of the course is to provide students with a firm foundation in the pharmaceutical sciences combined with the knowledge and skills required to carry out professional duties in clinical pharmacy and pharmacy practice.” Clinical pharmacy was taught in all four years with an emphasis in the third and fourth years on applying pharmaceutical science to patient care and pharmacy practice.

As a consequence of the four-year course, the number of undergraduates at the School jumped from around 270 in 1996, to 390 the following year. By the mid-2000s, the School was receiving more than 1000 applications for the 90 home and European Union places on the undergraduate course, despite the withdrawal of maintenance grants and their replacement with student loans from 1998. The School responded to the high level of competition for its places by raising its standard A-level offer of BBB to ABB.

A promotional shot of the dispensary in 1998. (Cardiff University Archives & Special Collections)



Final year Cardiff pharmacy student Jonathan Burton is this year’s winner of the Reckitt & Colman pharmacy student of the year award. Pictured (l-r) at the presentation of the award are the Royal Pharmaceutical Society’s president Peter Curphey, R&C’s professional relations manager Mel Smith, Jonathan, National Pharmaceutical Association director John D’Arcy and last year’s winner Richard Taylor

Jonathan Burton MBE also served as WPSA Chair while at the School, and is now a community pharmacist and chair of the Royal Pharmaceutical Society’s Scottish Pharmacy Board. (Chemist+Druggist 18 April 1998)

> **“The school continues to be a pioneer in its approach to teaching clinical pharmacy which is largely problem-solving orientated with students working on case-studies which illustrate and emphasise the principles of therapeutics and decision making to ensure that patients receive drugs that are effective, economic and safe.”**
> *Pharmaceutical Journal*, 1997.

The School’s innovative use of computers in undergraduate teaching in the 1990s was also externally recognised. Amongst other awards, in 1990 Dr Keith Brain and Dr David Temple won the education category in the first ever Apple Business Excellence Awards for innovative use of Macintosh computers, to teach undergraduates drug analysis using software developed with pharmacists Dr Janet Daly and Andrew Bond to simulate dispensary-based problems. The School was also part of a consortium of pharmacy schools which were all developing teaching software for shared use.

The first cohort of Cardiff students to graduate from the new four-year degree in 2001 were the first to undertake new Objective Structured Clinical Exams (OSCEs) in pharmacy, based on problem-solving role playing which used transcripts of real conversations between pharmacists, staff, customers and patients, both in coursework and exams. This concentration on the development of communication and presentation skills has remained a key feature of the Welsh MPharm.

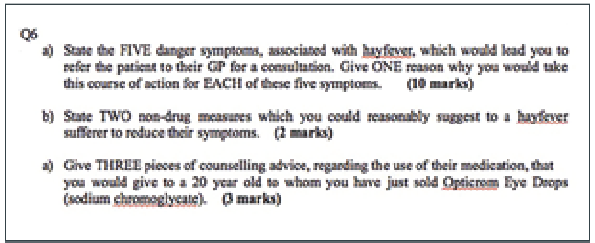
> **“within the next 25 years it seems likely that classes will be broadcast around the world, exposing pharmacy students to a worldwide range of experts and opinions.”**
> Professor Spencer, Head of School, 1990.

The syllabus for 2007 consisted of first year courses focused on Medicinal Chemistry, Physical Pharmacy, Pharmaceutical Microbiology and Immunology, Cell Biology and Biochemistry, Principles of Pharmacology, and Social and Professional Pharmacy. In Year Two, undergraduates studied Drug Design and Synthesis, Instrumental Analysis, Formulation Science, Drug Disposition, Viscero-thoracic Pharmacology, and Clinical and Professional Pharmacy, with an emphasis on dispensing prescriptions. Year Three covered Optimisation of Drug Design, Quality Assurance, Formulation Science, Autocoid, Endocrine and Imuno-pharmocology, Neuro-pharmacology, and Optimisation of Pharmaceutical Care. The final year comprised a core Problem-solving in Pharmaceutical Sciences module alongside a research specialisation, with the second semester focussed entirely on a research project. The prospectus for this period emphasised that teaching included lectures and laboratory classes plus computer-assisted learning and video demonstrations and tutorials.

The undergraduate prospectus could also claim “Excellent teaching…in a stimulating environment, benefiting from interaction with researchers working at the frontiers of knowledge in their subjects and with teacher-practitioners at the leading edge of health care practice.” These claims were based on clear results: in recent years, 80 per cent of students gained a First or 2:1, and for many years, all of the graduates had gained pre-registration training positions. A pie-chart of pharmacy sector destinations for graduates between 2002 and 2006 showed that 44 per cent started employment in community, 53 per cent worked in hospital, one per cent in industry and two per cent in other areas.

The School achieved top place in *The Guardian’s* ranking table for pharmacy schools in 2003, and again in 2008 and in 2013. Over the intervening years, the School has performed consistently well in National Student Satisfaction (NSS) surveys, first introduced nationally in 2005, and university league tables as a result of high entry requirements, excellent student experience and the School’s exceptionally high levels of graduate employability. These achievements have also been recognised with the School being consistently highly positioned in key league tables that rank Higher Education Institutions (HEIs) in their subject area with varying focus on educational environment, experience and scholarly activity. This remains true to the current day with the school ranked top of those offering the MPharm in England and Wales by the *Complete University Guide 2020*.

Dai John leading a seminar in the late 1990s.
(Cardiff University Archives & Special Collections)



Q6

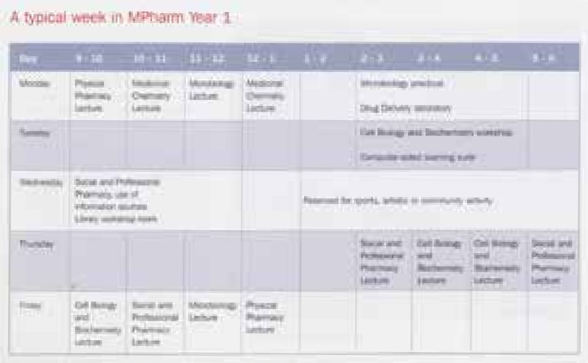
a) State the FIVE danger symptoms, associated with hayfever, which would lead you to refer the patient to their GP for a consultation. Give ONE reason why you would take this course of action for EACH of these five symptoms. **(10 marks)**

b) State TWO non-drug measures which you could reasonably suggest to a hayfever sufferer to reduce their symptoms. **(2 marks)**

a) Give THREE pieces of counselling advice, regarding the use of their medication, that you would give to a 20 year old to whom you have just sold Opticrom Eye Drops (sodium chromoglycate). **(3 marks)**

An extract from the 2004-5 Social and Professional Pharmacy exam paper.

The School has continued to hold its own in an increasingly competitive higher education recruitment market following the removal of home and European Union student number caps and the introduction of the new student tuition fee arrangements in 2012. Competition has been particularly acute for Pharmacy applicants: between 2003 and 2009, the number of UK pharmacy schools increased from 12 to 21. By 2019, this had increased to 31 MPharm degrees accredited by the General Pharmaceutical Council.



A typical week in MPharm Year 1

Day	9 - 10	10 - 11	11 - 12	12 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6
Monday	Physical Pharmacy Lecture	Medicinal Chemistry Lecture	Microbiology Lecture	Medicinal Chemistry Lecture		Microbiology practical Drug Delivery laboratory			
Tuesday						Cell Biology and Biochemistry workshop Computer-aided learning suite			
Wednesday	Social and Professional Pharmacy, use of information sources Library workshop room				Reserved for sports, artistic or community activity				
Thursday						Social and Professional Pharmacy Lecture	Cell Biology and Biochemistry Lecture	Cell Biology and Biochemistry Lecture	Social and Professional Pharmacy Lecture
Friday	Cell Biology and Biochemistry Lecture	Social and Professional Pharmacy Lecture	Microbiology Lecture	Physical Pharmacy Lecture					

This typical week in MPharm Year 1 appeared in the prospectus for 2007 entry.

Cardiff was able to hold its position in no small part because its students consistently out-performed the sector norms in maintaining top-tier pass rates in the General Pharmaceutical Society exams: 95 per cent in 2011, 98 per cent in 2012, 90 per cent in 2013, 96 per cent in 2014. In 2016, the *Pharmaceutical Journal* reported that the students from pharmacy schools at Bath, Cardiff, De Montfort and Kings College London all achieved 100 per cent pass rates for the GPhC exams for the first time. In 2019, the School's first-time pass rate was 92 per cent, far higher than the overall national average of 78 per cent.

The School has continued to innovate in response to the growing need for clinical skills and introduced its first role-emerging placements in 2017. These placements give students opportunities to practice their skills or observe pharmacy professionals working in non-traditional settings, such as drug and alcohol services, prison pharmacy and with third sector organisations, such as the Carers' Trust. In October 2018, the School partnered with Cardiff and Vale Volunteering to place students in a range of patient-facing voluntary secondary care settings to expose them to the work of the healthcare team and challenge them to engage with a wide range of patient groups. The School's placement programme is currently undergoing a transformation to fully equip students for the changing demands on pharmacy professionals within all sectors and allow the students to follow the entire patient journey.

> **"With the spectre of 'market forces' now threatening the viability of some lower quality schools of Pharmacy, our strategy at the Cardiff School of Pharmacy and Pharmaceutical Sciences is very simple. We continue to recruit the very highest quality students, from all backgrounds and in moderate numbers and we provide them the highest quality education by the leading scholars in the discipline."**
> Professor Gary Baxter,
> Head of School, 2015

Celebrating graduation in 2017.

Students at work in the aseptic suite in March 2011.

Since 2018, first year Pharmacy students have volunteered in the Patient Experience Team at Cardiff and Vale Health Board.

A diverse student body

During this period, the demographics of the student body, in line with other UK pharmacy schools, had become more diverse: more international, more female and with increasing diversity in the ethnic and socio-economic background of students. The number of international students grew with undergraduates in the 1980s and early 1990s from Malaysia, Kenya, Hong Kong, Israel, Uganda, Zambia and Canada. In the following decades, in an effort to increase the diversity of student intakes, staff undertook annual visits to Hong Kong, Malaysia and Kenya to interview potential international students.

As well as welcoming overseas students to the School, there were a number of successful exchange programmes. In 1988, an exchange programme was established with University of North Carolina at Chapel Hill, with American students visiting the School in the early summer, and a similar group from Cardiff travelling to the USA. Christine Lewis, one of seven BPharmII students who took part in July 1989, reported a combination of visits to industry, wholesale, and academic settings, alongside discussions and learning about the differing pharmacy practice and legal requirements, and a wide range of social events.

Over the years the School has participated in many Erasmus exchange schemes. For example, Stéphane Jaglin has fond memories of his time as an Erasmus exchange student from the Faculty of Pharmacy in the University of Nantes, Cardiff's twin city, in 1993, a partnership first established in 1991. He recalls the friendly and welcoming atmosphere at the School, the multicultural character of Cardiff, and taking advantage of what he felt was the best Students' Union in the UK. Whilst in Cardiff, Stéphane also met his lifelong partner, Sarah, the mother of his 'Erasmus babies' and now works as a pharmacist in England.

In 2009, the first students graduated with an MPharm degree awarded by Cardiff University. In the same year, the School established two collaborative undergraduate programmes with Taylor's University College in Kuala Lumpur, Malaysia. From 2010, Malaysian students could study for an MPharm spending two years in Malaysia followed by two years in Cardiff, or a BPharm with four years' study at Taylor's University College. The first students enrolled in January 2011, after approval from the General Pharmaceutical Council and the Pharmacy Board of Malaysia. Of 25 in the first cohort, 20 students chose to come to Cardiff, and WPSA established a buddy scheme to welcome and support these students using email, Facebook and Skype.

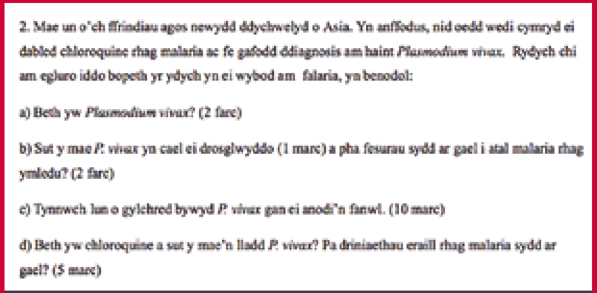
Students and staff member Dai John taking part in the University of North Carolina exchange, 1989. (Dai John)

In recent years, the School has seen growing pharmacy educational demand from the Gulf states and has welcomed increasing numbers of students from Saudi Arabia and Kuwait. The School established a memorandum of understanding with the Kuwaiti Government in 2017 to support the admission of Kuwaiti government-sponsored undergraduates to the MPharm programme.

Pharmacy students and staff at Taylor's University College, 2010.

Travelling on the UNC School of Medicine plane, 1989. (Dai John)

Between 2002 and 2012, the MPharm programme saw a significant increase in the number of female and first generation British Asian undergraduates from state schools. In terms of gender, the percentage of women undergraduates in pharmacy across the United Kingdom in this period was around 65 per cent. In October 2013, the School was the second UK pharmacy school to receive the Athena SWAN silver award recognising its efforts to advance the representation of women in science, engineering and technology careers.



2. Mae un o'ch ffrindiau agos newydd ddychwelyd o Asia. Yn anffodus, nid oedd wedi cymryd ei dabled chloroquine rhag malaria ac fe gafodd ddiagnosis am haint *Plasmodium vivax*. Rydych chi am egluro iddo bopeth yr ydych yn ei wybod am falaria, yn benodol:

a) Beth yw *Plasmodium vivax*? (2 farc)

b) Sut y mae *P. vivax* yn cael ei drosglwyddo (1 marc) a pha fesurau sydd ar gael i atal malaria rhag ymledu? (2 farc)

c) Tynnwch lun o gylchred bywyd *P. vivax* gan ei anodi'n fanwl. (10 marc)

d) Beth yw chloroquine a sut y mae'n lladd *P. vivax*? Pa driniaethau eraill rhag malaria sydd ar gael? (5 marc)

A Welsh language exam paper from 2015 included this question about malaria.

With the intake diversifying and also becoming more international, the School also renewed its focus on welcoming Welsh-speaking undergraduates to address the needs of the Welsh population and NHS Wales workforce. Welsh-speaking students are now assigned a Welsh-speaking personal tutor and are able to submit assessed work and sit exams in Welsh. In September 2015 the School appointed three part-time Coleg Cymraeg Cenedlaethol-funded Welsh speaking staff to teach and mentor on the School's MPharm degree. Creation of these roles has facilitated the introduction of mainstream Welsh language provision into all years of the MPharm undergraduate curriculum.

The Welsh language provision is now delivered in a bilingual setting with both Welsh-speaking and English-speaking students taught side-by-side in sessions which simulate interactions with patients about their health and medicines to prepare students for patient interactions when they are on clinical and role-emerging placements. It is anticipated that this approach could also assist in the recruitment and retention of staff in certain parts of Wales.

Alongside a more diverse undergraduate population, the school has embraced additional opportunities for international experiences. For example, in 2018, Year Two and Three MPharm students signed up for Ethical Education Placements in Uganda with the charity Knowledge for Change, which brings young women and men in a range of medical fields together to work in Ugandan health facilities during the summer break.

A promotional photo of students practising patient-facing skills, 2017.

WPSA Ball, 1995

> **"I always remember a sense of belonging, which perhaps the other non-pharmacy students didn't have. We managed to have a genuine closeness amongst our year, and this extended to older pharmacy students and the younger ones as they came through too."**
> Neela Prabhu (nee Karve), BPharm 1996-99

Student life

A new student initiative began in 1993: WPSA's *Survival Guide to Cardiff and the Welsh School of Pharmacy* which sought to provide full details of social activities, courses and staff for new undergraduates. In the first edition, events included a Freshers' Barn Dance sponsored by the local RPSGB branch, and an end of term barbecue to finish the year. The WPSA committee at this point included a new Education and Welfare Officer, and a Schools Liaison Officer to co-ordinate sixth form visits. WPSA also organised a Big Brother or Sister second year student to mentor new first years.

Of course, a key part of the *Guide* was to provide pointers for new students' social lives. There is a guide to eating kebabs including "Plenty of alcohol before to kill off any bacteria." The recommended pubs included The Woodville described as "a famous or is that infamous Pharmacy haunt", and only one minute away from the Redwood Building if you run. The Tafarn or The Tav (in the Union) is described as "Mecca, Heaven, Paradise.. if God's home was a bar this would be it." Terminal 396, the Union's club night, was also recommended as was the Hippo Club for top DJs. The guide for lecturers was frank with one staff member described as "chief torturer" and another as "always willing to give advice, usually in the pub."

A promotional shot in the refectory in 2010.
(Cardiff University Archives & Special Collections)

The perennial challenge of student accommodation was relieved slightly in the 1990s, with new hall accommodation guaranteed for first years, and many second and third years, within walking distance of the School. WPSA's *Survival Guide* in 1993 noted some distinctive features: Senghennydd House, the closest hall to the city centre and Students' Union and recently refurbished, drew comment for its big beds whilst the catering at Traherne Hall was described by the students as "okay if you like School dinners." Traherne and Heycock Halls were coming to the end of their existence, demolished in the mid 1990s, but the University continued to keep up with demand and increasing student numbers, maintaining the option of accommodation for all first years throughout this period with more than 4,000 University-owned student accommodation places in 16 halls of residence.

Tragically, first year pharmacy student, Samantha Milroy, was one of two Cardiff University students to die in an outbreak of meningitis in November 1996. Many students and staff of the School attended her memorial service, held in St David's Hall. WPSA made a donation to the National Meningitis Trust in her memory, and the Samantha Milroy Memorial Prize was established, awarded to an undergraduate who has made an outstanding contribution to the student community.

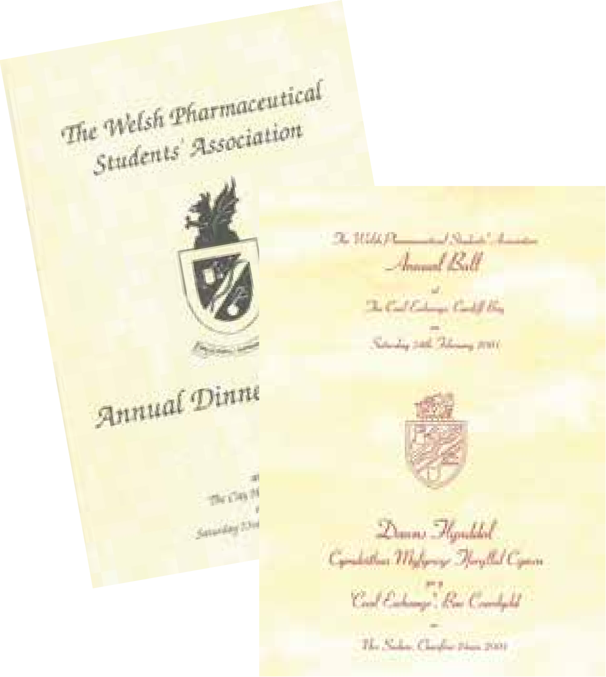
The WPSA minute books provide a good insight into the preoccupations and social activities of the undergraduates. The social programme continued to focus around the same key points as in previous decades. In 1991, the Rag float was shared with the Afro-Caribbean Society, but there was a poor turn-out probably due to very wet weather. The highlight of the year was still the WPSA ball, although some students' priorities were clear when, in 1992, there were discussions about making sure that it didn't clash with any Five Nations rugby international matches.

Final year students performing in the cabaret at the WPSA Dinner Dance, held at the Angel Hotel in 1985. (Dai John)

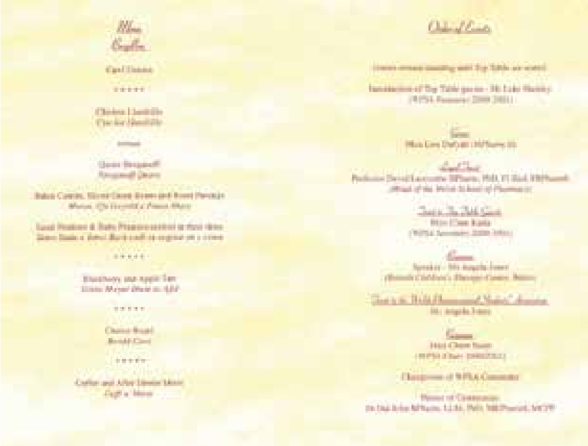
A promotional shot taken on the second floor of the Redwood Building in 1998. (Cardiff University Archives & Special Collections)

The WPSA committee still determinedly tried to organise an annual 'cultural' visit, with destinations such as a vineyard near Llantrisant, Ironbridge Gorge Museum, Alton Towers, a weekend in Paris, the Cider Museum in Hereford, and a trip to Felinfoel brewery and the beach all considered in the early 1990s. A day trip to France was discounted as being too far, and the majority in 1991 voted for Stratford-upon-Avon, the third years apparently insisting that the location had to have plenty of pubs.

Whilst WPSA has primarily focussed on students' social activities, it has a wider mission. With then Head of School Professor Spencer's support, the WPSA committee campaigned in the 1990s to run first aid evening classes for all students . More recently, WPSA won the first-ever Most Charitable Society title at the Cardiff Students' Union Society Awards in 2011, for their fundraising efforts totalling £4,600 for the Kidney Wales Foundation. In 2018, WPSA raised £5,208 to support the national cancer charity Maggie's after hearing how the charity had helped the late Professor McGuigan and a current Cardiff University student diagnosed with cancer.



The Welsh Pharmaceutical
Students' Association



(Dai John)

Cardiff's students have maintained strong links with the national British Pharmaceutical Students' Association (BPSA), hosting the BPSA Conference in 1998. A decade later, in November 2018, the School hosted the BPSA Western Region's weekend conference on Medicines Access and Supply, with a specific focus on pharmacists' roles in addressing global health inequalities. WPSA still nurtures these strong links with the national association.

Sport continued, and continues to this day, to be important to pharmacy students, and Wednesday afternoons, reserved for extra-curricular activities across the University, could be busy times. Pharmacy teams played rugby, football and netball regularly against other departments. Students at the School also continued to be active participants in the annual BPSA sports day. The WPSA minutes in 1991 reveal that travelling to Sheffield for a rugby fixture did not just involve transport arrangements: "Mark, Tim and Rob will make the leek. Steve will sort out the Dragon suit."

Cardiff students also continued to excel in wider sporting spheres. In 2012, Emma Thomas, in her second year at the School combined her studies with playing in the Welsh national squad for netball, and in the Celtic Dragons Superleague team. In 2012, Ross Wardle was signed up by Newport Dragons Rugby team while still an undergraduate, going on to make 50 appearances before retiring back to a pharmacy career after knee surgery in 2016. Jenny Hawkins made her international debut for the Welsh rugby team against Italy in 2014 as part of the squad for the Women's Rugby World Cup. The following year she was selected again for the 2015 Women's Six Nations Championship. In 2018, whilst still studying at the School, Bethan Morris was the highest ranked Welsh women golfer, representing Wales at a number of international championships.

Joshua Bugajski, who took up rowing for the first time in his second year studying pharmacy at the School, competed in the National Rowing Championships in 2011, and the World Under-23 Championships in 2012. Having graduated, he went on to row for Oxford in the 2016 and 2017 Boat Races, whilst studying for a Master's degree at Oxford University. He made his senior Great Britain debut in 2018.

Alumni groups retain strong links with the school, with this group visiting in October 2018.

Cardiff XV playing (in red and white) at Cardiff High School Old Boys ground, Forest Farm, Whitchurch, 1991. (Dai John)

The School were featured in The Chemist and Druggist as winners of the BPSA team prize at the sports finals in Portsmouth in 1986. (Chemist + Druggist)

The Time Test song – to the tune of the Time Warp

It's so dreamy
Pity it's not creamy
But semi-solids
Shouldn't really flow
My solutions are filtered
Suppositories are wilted
And enemas
That won't make you go
With a bit of tuition
You can fulfil your ambition
To make all these dosage forms
Ointments and gels
That won't ever sell
Let's do the Time Test again!
We're all doing the Time Test again!!

Pharmag 1990

The WPSA ball, 2020 (Lee Jordan Photography)

WPSA continue their fundraising efforts, with a team running in the Cardiff Half Marathon in October 2019 raising money for local charity Life for African Mothers

Cardiff football team playing at the BPSA Western Area conference in Bath, 1986/7. (Dai John)

Postgraduate study

By 1990, it was estimated that around 18 per cent of pharmacists in Wales were involved in continuing education. The School's postgraduate programmes and continuing professional education courses provided opportunities for the professional development of qualified pharmacists and other healthcare professionals.

During this time, the School offered three part-time diplomas: Clinical Pharmacy (with the Southern Derbyshire Health Authority) had its first four successful candidates in 1988, and in the same year the School and its partner the Southern Derbyshire Health Authority established links with the University of Illinois College of Pharmacy in Chicago, so that the diploma programme was recognised for entry into the College's Doctor of Pharmacy course. A Clinical Science diploma was established with the Association of Clinical Research Associates to the Pharmaceutical Industry and a diploma in Regulatory Affairs was set up with the British Institute of Regulatory Affairs. All three programmes were financially self-supporting, and brought around 180 students into the School. A diploma in Community Pharmacy was introduced in 1993, and in 1995 the Clinical Pharmacy course was also offered as a part-time MSc, in partnership with hospitals in Oxford, Bradford, Airedale, Cardiff and Wrexham.

By 2002, the postgraduate taught courses consisted of modular diplomas and MSc programmes in both Community and Clinical Pharmacy for pharmacists working in community settings or accredited hospitals, respectively. The Community Pharmacy diploma was studied over two years, with the option to extend to a Masters degree by completing a third year research-based module and practice-based research dissertation. The Diploma in Clinical Pharmacy consisted of 12 modules which could be taken over two or three years, with the option to extend to a Masters with a practice-based research dissertation. Course fees in 2002 were £1,175 a year for the diploma, and £850 for the Masters year, with individual modules at £325. By 2006 there were more than 150 students on the taught postgraduate schemes. In 2007, the School also established an MSc in International Pharmaco-economics and Health Economics in collaboration with Hochschule Fresenius, offered as a part-time or full-time course delivered wholly in Germany.

The audience at a PhD seminar in the (then) New Lecture Theatre.

In 2004 the School of Pharmacy partnered with the School of Nursing and Midwifery Studies (now the School of Healthcare Sciences) to develop and deliver a Welsh Government-commissioned interdisciplinary Supplemental Prescribing programme. With the introduction in 2007 of Independent Prescribing by non-medical healthcare professionals nationally, the School established a new Non-Medical Prescribing Postgraduate Certificate. As more healthcare professionals were allowed to train as prescribers, the School decided in 2012 to develop a separate pathway for pharmacists: a 40 credit independent prescribing module with inter-professional teaching maintained with the School of Healthcare Studies prescribing programme. As the demand for pharmacist independent prescribing has increased, the School runs the module a number of times each year and from September 2019 it was integrated as an option within the Diploma in Clinical Pharmacy programme.

Currently, in addition to an Independent Prescribing qualification, the School offers three postgraduate taught programmes: MSc in Clinical Research, MSc in Cancer Biology and Therapeutics, and MSc, Postgraduate Diploma or Postgraduate Certificate in Clinical Pharmacy.

Continuing professional development

For the majority of Welsh pharmacists during this period, Continuing Education meant ongoing professional development. On 15 March 1991, the Welsh Centre for Postgraduate Pharmaceutical Education (WCPPE) was officially opened by Nicholas Bennett, Under Secretary of State in the Welsh Office.

In 1994, WCPPE director, David Temple, advertised the first UK national conference on continuing and further education and training in pharmacy. Two years later, a new website was launched aimed at pharmacists working in Wales and a distance learning resource on quality management systems and audit was launched in April 1997. That same year, WCPPE moved to a new home at 8 North Road, Cardiff, whilst remaining an operational part of the School. Its value was expressed in the University prospectus: "Its close relationship with the school permits the sharing of many educational materials and, perhaps more importantly, draws the attention of prospective pharmacists to the need to participate in continuing education throughout their professional careers." In 2006, WCPPE was one of four bodies offering a new modular portfolio course to support community pharmacists to achieve accreditation for newly-introduced Medicines Use Reviews and Enhanced Level Services, promoted in an advert as "A new pharmacy contract, a new challenge!"

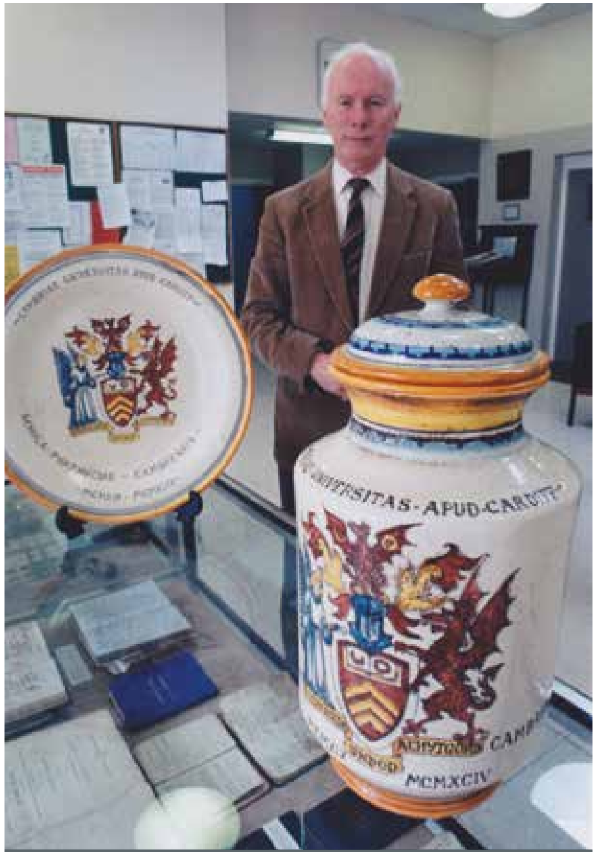
WCPPE continued to thrive and innovate under the energetic leadership of Cath O'Brien, David Temple's successor from 2009, and then headed by Margaret Allen from 2013. Under Margaret's leadership in October 2018 WCPPE transferred into a newly formed special health authority, Health Education and Improvement Wales (HEIW). This authority, representing multiple health professions, has the responsibility for the further education and training of their respective workforces. The School continues to work closely with HEIW on the development of pharmacy professional education in Wales, including supporting HEIW's development of an all-Wales quality-assured, multi-sectoral pre-registration year.

Staff

In the 1980s, restraints on staffing and student numbers respectively from government, and the PSGB meant that academic staff numbers across all UK schools of pharmacy decreased. Cardiff was no exception: in 1993, the permanent academic staff numbered 19 (in contrast with 28 in 1980), meaning the School became dependent on staff on fixed-term contracts. The School had established chairs in Pharmacology, Pharmaceutics and Pharmaceutical Chemistry. Additionally, external financial support from a consortium of pharmaceutical companies funded a new Chair in Clinical Pharmacy. Three other members of academic staff were funded in the 1990s by the Welsh Office in support of continuing education through the Welsh Committee for Postgraduate Pharmaceutical Education and further development of the postgraduate Diploma in Clinical Pharmacy, but budgetary constraints continued to make expansion of staff numbers a challenge.

The decline in academic staff numbers was halted as a result of the new Research Assessment Exercise in 1992. With the Welsh Funding Council recognising that the School should move from a Grade 3 to Grade 4A research rating, its resources were increased and the School's academic staff complement began to grow.

In 1994, the School celebrated 75 years of pharmacy education in Cardiff. In the same year, Professor Spencer was appointed Pro-Vice Chancellor with a responsibility for University building and infrastructure. He remained as Head of School until 1997, before his retirement in 1998. Professor David Luscombe was appointed as his successor, having joined the staff in 1970 as Senior Lecturer in Pharmacology, becoming Professor of Clinical Pharmacy in 1989. Professor Luscombe served as Head of School until 2003, when Professor Stephen Denyer joined the School from Brighton as his successor.



For the School's 75th anniversary in 1994, the School commissioned a commemorative jar and plate, inspired by historical examples.

David Luscombe

Pharmaceutical Journal

David Luscombe graduated from the London School of Pharmacy, and gained his PhD in Applied Pharmacology from the Brighton School of Pharmacy. He was appointed to a Lectureship in Pharmacology at Leicester School of Pharmacy in 1967 and moved to a similar position at the Welsh School of Pharmacy, Cardiff University, in 1970. He became Head of Clinical and Professional Studies at Cardiff in 1984 and was promoted to Senior Lecturer and then to the Chair in Clinical Pharmacy in 1989. He was Head of the Welsh School of Pharmacy from 1997 until 2003, when he stepped down to become the Director of Patient Safety Research at Cardiff University. He retired from his academic post in November 2009, the title Emeritus Professor being conferred by Cardiff University in April 2010.

Professor Luscombe is the author of over 300 papers and conference proceedings in scientific and clinical journals. He also served on the board of a number of journals and was Editor in Chief of the *Journal of Applied Therapeutic Research* and Co-editor of the *Clinical Research Manual*. He was a member of a number of Royal Pharmaceutical Society Committees, Chairman of the UK Heads of Schools of Pharmacy Committee (1999-2001), Occasional Consultant in Clinical Pharmacy to the World Health Organisation, and a member of various Cardiff University and Welsh Assembly Government Committees. He is a Fellow of the Royal Pharmaceutical Society, Fellow of the Society of Biology, a Chartered Biologist, Honorary Member of the British Institute of Regulatory Affairs (TOPRA) and an Honorary Member of the Royal College of Physicians Faculty of Pharmaceutical Medicine.

Stephen Denyer

Stephen Denyer graduated BPharm from Nottingham University in 1975, going on to obtain his PhD there in 1979, and then joining as Lecturer in Pharmaceutical Microbiology. In 1991, he moved to head the Department (now School) of Pharmacy at the University of Brighton as Professor of Pharmaceutical and Applied Microbiology. Professor Denyer moved to Cardiff as Head of School in 2003, and in August 2010 was appointed Deputy Pro-Vice Chancellor for Education and Students. In 2014, he returned to Brighton as Pro-Vice Chancellor for Learning and Teaching, retiring in 2018.

Professor Denyer has contributed to the work of a number of national bodies, including microbiology advisor to the UK Medical Devices Agency (1993-2000), an expert assessor on active implantable medical devices and a microbiology expert on the British Pharmacopoeia Commission, and serving on an Expert Working Party for the European Pharmacopoeia Commission. He was also a member of the MHRA sub-committee for Pharmacy, Chemistry and Standards (1999-2007), a member of the Health Protection Agency's rapid review panel on novel infection control agents and the NHS Engineering and Science Advisory Committee on prion decontamination. Professor Denyer is a former academic member of the Royal Pharmaceutical Society Council (2005–8), and was trained as a QAA subject assessor in 2000, acting as external examiner to a number of Higher Education Institutions. He was elected as a Fellow of the Royal Pharmaceutical Society in 2000 and received the Society's 2003 Charter Gold Award for outstanding contributions to the profession.

In 2010, Professor Stephen Denyer was appointed Deputy Pro Vice-Chancellor for Education and Students and was succeeded as Head of School in August 2010 by Professor Gary Baxter, who had joined the School from the Royal Veterinary College in 2007. In 2017, Professor Gary Baxter was appointed to the role of Pro Vice-Chancellor for the College of Biomedical and Life Sciences. Professor Mark Gumbleton was appointed as his successor as Head of School, and assumed the role on 1 August 2017.

In addition to regular members of staff, the School values enormously the role of Teacher-Practitioner ('TP') colleagues, who have provided vital support for the School's professional programmes since the late 1980s, with appointees providing highly relevant, current, contextualised practice-based input to the MPharm, complementing the School's academic content.

Heads of School, Stephen Denyer and his predecessor Paul Spencer, on the unveiling of Professor Spencer's portrait.

Staff continued to contribute beyond the School in the wider Welsh, national and international pharmacy community. In the 1990s for example, Dr Bryan Veitch, the Welsh Office's Chief Pharmaceutical Adviser, was appointed Honorary Visiting Professor at the School, and Paul Spencer, Head of School, served as chair of the Welsh Pharmaceutical Committee, a body advising the Secretary of State for Wales. Today staff members play a significant role in the wider profession, collaborating closely with key pharmacy bodies, stakeholders and decision makers.

At Professor Paul Nicholl's retirement party in 2002, David Luscombe and Stephen Denyer as past and current Heads of School led the tributes.

Pharmacy graduation, 2012.

Gary Baxter

My journey in academic pharmacology began as a 14 year old when I bought the two volumes of Martindale's *Extra Pharmacopoiea* (22nd edition, 1941) in a second-hand bookshop. I read it obsessively and that publication, together with a Saturday job in the local branch of Boots, confirmed my desire to become a pharmacist. I studied for the BPharm at Nottingham, taught by, amongst others, a young Stephen Denyer.

After pre-reg training at the London Hospital, I thought my heart was set on a career in hospital pharmacy; this was in the mid-1980s, when clinical roles were emerging. I spent three years in training posts in East Anglia but, at Addenbrooke's Hospital in Cambridge, I realised that I really yearned to be in an academic environment and that pharmacology was what I wanted to do. I embarked on research for a PhD, researching the interaction between cardiac hypertrophy and myocardial ischaemia/reperfusion.

On completion of my PhD in 1991, I moved to UCL where I spent the best part of 10 years researching the recently discovered phenomenon of cardiac preconditioning and developed my love of teaching in the physiology department. There I had the experience of teaching Starling's law of the heart to medical students, only a few yards from the laboratory where Starling had worked. After work in Cape Town, I moved in 2002 to be Reader in cardiac biology at the Royal Veterinary College in Camden. The environment at the RVC was wonderfully stimulating. Although having to learn, do and teach cardiac auscultation on horses (of which I am terrified) was daunting, the research environment and calibre of students was second to none.

I was fortunate to have the opportunity to move to Cardiff as Professor of Pharmacology in April 2007. There is a sense of all the threads of my career coming together in Cardiff. Having spent most of my working life to that point outside pharmacy, I was appointed by Stephen Denyer, my former teacher in Nottingham, to work in a school of pharmacy, teaching physiology and pharmacology to the next generation of pharmacists. To serve as Head of School from 2010 to 2017 was an exceptional privilege.

Facilities

In 1990, Professor Spencer described the Redwood Building as "overcrowded, restrictive and inadequate." Although the creation of UWCC had increased the School's accommodation by about 30 per cent through amalgamating departments, it took around 18 months and a £1,250,000 investment in refurbishment to bring about what Professor Spencer described as "a very substantial and necessary improvement."

In 1996, Professor Paul Nicholls and his wife Mrs Rosemary Nicholls presented a portrait of Theophilus Redwood to the School, watched over by R. Vernon Lloyd, past Head of School and Mrs Nicholls' father. (Pharmaceutical Journal)

On 15 June 2000, Her Majesty the Queen visited the Redwood Building and opened the Tenovus Cancer Research Laboratories. (Pharmaceutical Journal)

On 15 June 2000, Her Majesty the Queen visited the Redwood Building and opened the Tenovus Cancer Research Laboratories within the School. The new centre was funded by a £4.7million grant from the Welsh-based cancer charity, Tenovus, and a contribution from AstraZeneca to refurbish the laboratories. The laboratories moved to the School when its director, Professor Robert Nicholson, was appointed to a Chair in Cancer Pharmacology earlier in 2000. The labs' research team of 25 focussed on research in breast and prostate cancer, including the development of tamoxifen; newer medicines such as Faslodex, Zoladex and Iressa; and used gene discovery techniques to investigate biological features of cancers, including endocrine response failure and metastatic spread.

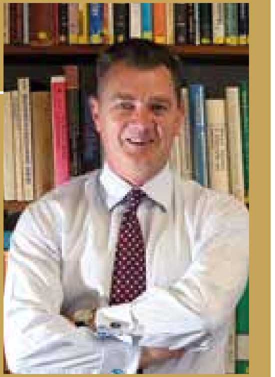
Professor Chris McGuigan, then the School's Director of Research, used the royal opening to highlight the School's successful track record in partnership work with the pharmaceutical industry. Professor McGuigan's own work in the design and synthesis of potentially useful molecules as antiviral therapies for use in herpes, hepatitis and HIV/AIDS was a prime example. A licence agreement to develop technology discovered by Professor McGuigan and his research team with Glaxo Wellcome was worth over £1.5million.

Pharmacy graduates, 2009.

In 2007, the School of Optometry moved out of the Redwood Building and most of its space was allocated to Pharmacy. A major refurbishment took place between 2009 and 2013, funded by the Science and Research Investment Fund, Cardiff University capital project money and the School's own reserves. The renovations included: a new high capacity general teaching laboratory for drug delivery, microbiology and pharmacology on the ground floor; a clinical teaching facility with a dedicated suite of consultation rooms for teaching on patient interaction and communication, and upgrades to lecture theatres, seminar rooms and private study space. Brand new pharmacology research laboratories were installed on the third floor, and modern synthetic chemistry and antiviral drug discovery laboratories were refitted to replace furniture and facilities which had been in place since the building opened. A state-of-the-art Good Manufacturing Practice suite containing aseptic and non-sterile training and production facilities was opened in 2009, and a molecular modelling suite was added to further support the discovery of novel drug candidates.

The New Lecture Theatre was expanded to hold 158 students and the Pharmacy Lecture Theatre was modernised and renamed the Vernon Lloyd Lecture Theatre in September 2010 to commemorate the former head of school. The café, reception and quiet study area were refurbished, alongside the student admissions, administrative and Head of School's offices. Video-conferencing facilities were installed in a newly equipped board room. In 2014, the 'New' Lecture Theatre was re-named in honour of the late Paul Spencer, Head of School (1978-1997), who had died in 2012. In 2016, an Education and Students Office was created on the first floor of the Redwood Building to accommodate the newly formed Education Team to support the School's teaching and admissions functions. Overall, this period of sustained investment positioned the School well to respond to emerging research priorities and the evolving training needs of the profession.

Chris McGuigan
1958-2016



Chris McGuigan graduated with a first class degree in Chemistry from the University of Birmingham in 1979 followed by a PhD in anticancer drug design in 1982. After postdoctoral research at the University of Alberta in Edmonton, Canada, he was appointed Demonstrator at the University of Exeter, and then Lecturer at University College London. In 1990, he moved to the University of Southampton. He took up the post of Reader in the Cardiff School of Pharmacy in 1994, and was appointed Professor of Medicinal Chemistry in 1995.

Professor McGuigan's research expertise was in new drug discovery and development for particularly anti-cancer and anti-viral agents. He was the inventor of many new experimental drugs that entered, and continue to enter, human clinical trials. He published over 200 scientific papers, submitted over 100 patent applications and trained more than one hundred researchers in his laboratories. His work involved close collaboration with scientists across the world.

He was a founder of Cardiff ProTides, a founding board member of Fermavis Pharmaceuticals, and a board member of another four companies. Chris also served as a panel member for Pharmacy in the Research Assessment Exercises in 2001 and 2008, as a Panel Member for the Research Excellence Framework in 2014, and as Chair of Cardiff University's REF Committee, 2010-13. He was the University's Pro Vice-Chancellor for research from 2012 to 2013. He was also President of the Cardiff Scientific Society, Director of Life Sciences Research Network Wales, and Chair of the Life Sciences Hub Wales. In the latter role his responsibilities included life science business growth in Wales, nurturing both home-grown companies and attracting top international talent. He also directed the Life Sciences Research Network Wales, a £15million initiative aimed at funding 100 new drug discovery projects across Wales.

A promotional photo taken in the lab in 1998. (Image courtesy of Cardiff University Special Collections &Archives)

Research

In September 1990, the British Pharmaceutical Conference was held, for the fourth time, in Cardiff. It offered an excellent opportunity to showcase the School's research, with Ian Kellaway as Science Chairman, and Paul Spencer, Mike Barnett and Tony Armstrong on the organising committee. The RPSGB President at the time was also alumna Linda Stone. The Welsh Secretary David Hunt used his BPC speech to announce the launch of the Pharmacy Practice Research Enterprise Scheme in Wales, and the establishment of an all-Wales Medicines Resource Centre.

To coincide with the BPC, Professor Paul Spencer, Head of School, wrote an article in the *Pharmaceutical Journal* about pharmacy education in Wales. At this point, around 20 per cent of students at the School were postgraduates: "Quite simply, pharmaceutical education does not cease with graduation, nor do the functions of this school of pharmacy." He reflected that the School's research work had grown substantially over the past twenty years, with more than 100 staff, post-doctorates and postgraduate students now in the School.

About three-quarters of the research came under two major programmes: 'Drug discovery and action' and 'Controlled drug delivery and drug targeting'. The School's third major research area was its drug usage programme, mainly working on joint ventures with hospital, community or industry partners. The School continued to support the Medicines Research Unit, which it had established in 1980 in Derbyshire Royal Infirmary, and was also carrying out joint projects with the Association of British Pharmaceutical Industry's Centre for Medicines Research at Carshalton.

The School was successfully attracting funding from research councils, professional bodies including the RPSGB, major charities, the Welsh Office and other government departments, as well as pharmaceutical industry sponsors in the UK, Europe, Japan, and the USA. In 1990, around £1.1million was received in research sponsorship. The outcomes were impressive: the School's publications exceeded 150 each year and more than 100 PhDs had been completed between 1985 and 1990.

In 1994, the School's forward plan included a mission statement that aimed "to establish a research school of singular international repute." Postgraduate research involved around 85 academic staff, research associates and research students, the latter forming more than 20 per cent of the School's student body. About 75 per cent of the research work was externally funded by industry, research councils, charitable bodies and government agencies.

By 1996, four research groups were promoted: Design and Synthesis of Drugs, Drug Delivery, Molecular and Cellular Basis of Drug Action, and Drug Usage. In the same year, the School was awarded a grade 5 in the Research Assessment Exercise. Ten years later, in 2006, the School was structured into four research areas: Medicinal Chemistry, Drug Action, Drug Delivery, and Health and Medicines, with around 70 students studying for Masters and PhD qualifications,

In 2008, the Research Assessment Exercise judged 85 per cent of the School's research activity as of international standing. A booklet produced by the School to mark its 90th anniversary in 2009 highlighted current research and facilities. Its state-of-the-art equipment enabled investigations involving radiation, genetic manipulation, and imaging including confocal microscopy, gamma-scintigraphy, and immunohistochemistry. The School also focussed on mammalian and microbial cell and molecular biology, synthetic and polymer chemistry, formulation design, and physicochemical characterisation. Work with the University's Advanced Research Computing facilities supported “world-class computation and 3D-visualisation for advanced molecular modelling and in-silico drug design” through the interdisciplinary Cardiff Centre of Molecular Modelling. The School's new Good Manufacturing Practice suite would allow for collaborative projects with the NHS, plus institution- and industry-focussed clinical trials . The guide described productive links with the Schools of Biosciences, Chemistry, Dentistry, Engineering, Medicine and Physics. Partnership projects included work with the Cardiff Institute of Tissue Engineering and Repair.

At the School's 90th anniversary in 2009, research was divided into five themes over four groups: Medicinal Chemistry, Pharmacology, Pharmaceutics, and Pharmacy Practice. The themes were experimental cancer therapeutics, drug delivery and biological interfaces, medicines and patient outcomes, cardiopulmonary studies, and infection and immunity. Medicinal Chemistry research included the design, synthesis and evaluation of novel compounds of biological and therapeutic interest, particularly anticancer, antibacterial, antiviral and antipsoriatic agents. In Pharmacology, there were three main research areas: cell signalling, smooth muscle pharmacology, and neurodegeneration and psychopharmacology.

Neil Henney, a PhD student in Professor Ken Wann's lab, carrying out patch clamp electrophysiology research in 2006.

Researchers working in drug delivery and pharmaceutical microbiology had by this time embedded extensive inter-disciplinary working, which included links with biologists, immunologists, engineers, chemists, material scientists and clinical researchers. Within drug delivery, research had a particular focus on transdermal and pulmonary drug delivery, gene delivery, polymer biosensing and mechanisms of drug, protein and gene transport. The School was also the base for the Cardiff University Stability Assessment Unit to investigate the stability of parenteral nutrition admixtures and the effectiveness and safety of intravenous lipid emulsions as drug delivery systems.

In pharmaceutical microbiology, research was focussed on microbial pathogenicity and mechanisms of action and resistance to antimicrobials and biocides; methods for microbial detection; vaccine development; and biofilms and interactions of microbes with medical devices. Pharmacy practice research continued the School's strengths in patient-centred professionalism including communication and adherence/concordance; public health pharmacy including pharmacovigilance and pharmacoepidemiology; health-related quality of life assessment in medicines usage, and professional, regulatory and service developments in pharmacy and pre-and post-registration education research.

Students present their research at an annual poster day, here in 2016.

The School regularly takes part in the National Eisteddfod of Wales. In 2016, led by Drs Emma Lane and Emma Kidd and Professor Arwyn T. Jones, they presented the School's popular Brain Games activities.

The School achieved notable successes in translating their research into commercial enterprises including Cardiff Scintigraphics, An-eX, Biotec, Muscagen, and Cardiff ProTides (acquired by Morvus in 2009), publishing 13 new worldwide patents. In 2008/9, 17 students successfully defended their theses for MPhil and PhD degrees, and £3.9million was achieved in research funding, 31 per cent from industry, 36 per cent from medical charities, and 22 per cent from Research Councils, the UK government and European grants. Staff shared their findings via 50 keynote addresses at international conferences.

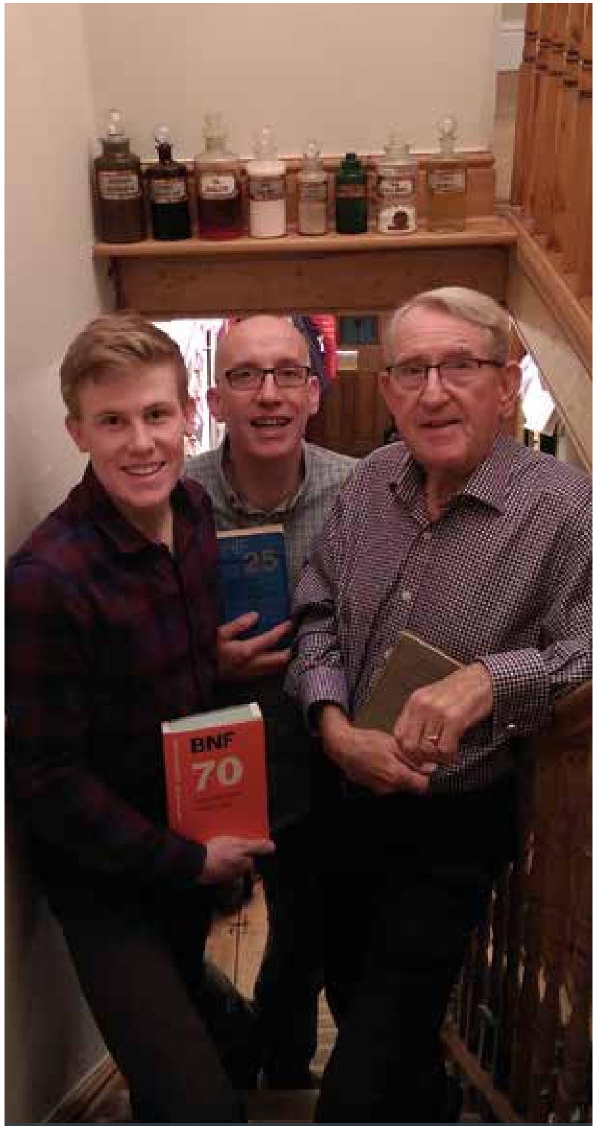
In 2014, the School and the University achieved excellent results in the Research Excellence Framework (REF) analysis, which replaced the Research Assessment Exercise. Nottingham and Cardiff Universities achieved joint first for research submissions for universities including pharmacy, and Cardiff University came second to Imperial College London for the new assessment of measuring the "impact of research beyond academic boundaries". The three impact case studies submitted by Cardiff School of Pharmacy were judged as having "outstanding world impact."

In more recent years the School has also developed a strong reputation for public engagement and educational activities, communicating its research and more broad scientific themes to the general public and school pupils at local and national level.

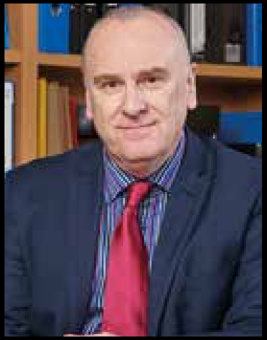
Over the last 10 years the School has published over 1,000 original journal publications which have received over 20,000 citations and been involved in successful research awards totalling around £55 million from a diverse range of funders.

Researchers on the Pharmabees project work to identify plant-derived drugs which could be used to treat antibiotic resistant hospital pathogens. A staff team were trained in 2014 to look after hives on the roof of the Redwood Building.

Pharmabees work with schools and colleges across Cardiff, with an active engagement programme.



Three generations of one family have studied at the School, Steve Williams (1988-91), his father David (1959-62) & his nephew Dan Ellesmere (2015-19). (Steve Williams)



“As the School and its alumni look back on their many achievements over the last 100 years we draw upon shared experiences which engender a strong sense of pride and identity. Our reflections provoke empathy with, and an ongoing responsibility to, all those who in some way are associated with the Cardiff School of Pharmacy.

At our centenary we recognise and celebrate our graduates and staff of earlier years, all of whom have shaped in some way a profession that continues to offer expanding opportunities for our new graduates, and importantly benefits the various communities they serve. Our new graduates will continue to innovate within an ever evolving professional workforce, share in our sense of pride and community, and reflect honour upon themselves and the School.”

Professor Mark Gumbleton, Head of School, 2020

APPENDICES

Glossary

Apothecaries' Assistant Exam	Qualification offered by the Society of Apothecaries from 1815 onwards.
Apothecaries, Society of	London-based livery company, founded in 1617.
Apothecary	Licensed member of the Society of Apothecaries within Greater London from 1617 onwards, but across the country more broadly used to describe a medical practitioner who dispensed medicines and from the early 18th century moved into general practice.
Apprentice	A trainee under the control of a master in order to learn a trade, typically for seven years.
British Pharmaceutical Students' Association (BPSA)	The BPSA was formed in 1942 by delegates from eleven pharmacy schools across the United Kingdom, including Cardiff, initially as the pharmacy faculty of the National Union of Students. It is still an active national organisation today.
Cardiff University	University of Wales College of Cardiff changed its public name to Cardiff University in 1999. It merged with the University of Wales College of Medicine in 2004, and in December 2004 became a legal entity, independent of the University of Wales.
Chemist & Druggist	Before the 1840s, a term used by those making and selling medicines. From the foundation of the Pharmaceutical Society in 1841, a membership category attainable by passing the Society's Minor (later Qualifying) Exam.
Coleg Cymraeg Cenedlaethol	Meaning 'Welsh National College' in English, the Coleg was established in 2011 by Welsh Government to support Welsh universities to develop Welsh-language courses and resources.
Dispenser	Role focussed on dispensing medicines, often within a hospital or institutional setting.
Eistedfodd	Welsh festival of culture, performance and literature, more recently embracing science.
Forensic Pharmacy	The legal framework for pharmacy practice and medicines regulation.
General Pharmaceutical Council	As a result of the Health and Social Care Act 2008, the General Pharmaceutical Council (GPhC) was established to act as the profession's independent regulator.
Health Education and Improvement Wales (HEIW)	On 1 October 2018, Health Education and Improvement Wales (HEIW) was established bringing together WCPPE with the Wales Deanery and NHS Wales's Workforce and Education Development Services. This authority now represents multiple health professions and has responsibility for their further education and training.
Histology	The study of the microscopic structure of tissues.
Major exam	A more academic exam than the Minor, this was established by the Pharmaceutical Society in 1841 and was intended for established business owning pharmacists who were, or who aspired to be, members of the Society. Successful candidates were called Pharmaceutical Chemists, and could become full members of the Pharmaceutical Society. In 1925, it became the Pharmaceutical Chemist Qualifying Examination.

Materia medica	Literally “medicinal materials”, this Latin phrase describes the study of raw materials used to make medicines, usually but not always plant-based.
Microbiology	The study of microscopic organisms
Minor exam	A qualification for pharmacists’ employed assistants, set up by the Pharmaceutical Society in 1841. The 1868 Pharmacy Act established attainment of this exam as the legal minimum requirement for new entrants to the profession. Successful candidates were called Chemists & Druggists. It became known as the Qualifying Exam in 1920.
Part I	From 1920, the Qualifying Exam (and the course leading to it) was split into two parts. Part I was pure science, consisting of 300 hours studying chemistry, 60 hours of physics and 60 hours of botany. The syllabus was intended to be in line with first year courses at university level, and candidates did not have to study them at a school of pharmacy.
Part II	From 1920, the Qualifying Exam (and the course leading to it) was split into two parts. Part II was an applied pharmaceutical section consisting of materia medica, pharmacy including posology (study of dosages), the translation and dispensing of prescriptions, and poisons laws.
Pharmaceutical Chemist	From the foundation of the Pharmaceutical Society in 1841, a membership category attainable by passing the Society’s higher level Major Exam, later Pharmaceutical Chemist Diploma or PhC.
Pharmaceutical Society See Royal Pharmaceutical Society	
Pharmaceutics	Pharmaceutics studies turning a chemical or drug into a medication to be used safely and effectively by a patient.
Pharmacognosy	Pharmacognosy is the study of medicinal drugs obtained from plants or other natural sources, now known as phytopharmacy.
Pharmacology	Pharmacology is the science of drugs and their effect on living systems.
Physiology	The branch of biology that deals with the normal functions of living organisms and their parts.
Phytopharmacy	The branch of knowledge concerned with medicinal drugs obtained from plants, previously known as pharmacognosy.
Posology	Posology is the study of dosages.
Pharmaceutical Society of Great Britain (PSGB)	National membership, examinations and regulatory body for pharmacy, established in 1841. It became the Royal Pharmaceutical Society in 1988. In 2010, it was de-merged to form the Royal Pharmaceutical Society (RPS) as a voluntary membership body, and the General Pharmaceutical Council (GPhC) to act as the profession’s independent regulator.

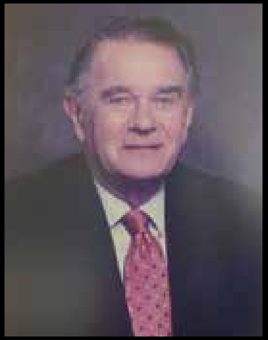
Qualifying exam	The Qualifying examination was newly-established in 1918, re-worked from the PSGB's existing Minor examination. By 1920 it was split into two parts: Part I consisted of pure science and Part II was an applied pharmaceutical section. The two parts of the examination could be taken together or separately.
Research Assessment Exercise (RAE)	An exercise undertaken approximately every 5 years on behalf of the four UK higher education funding councils to evaluate the quality of research, and inform the allocation of research funding. RAEs took place in 1986, 1989, 1992, 1996, 2001 and 2008. It was replaced by the Research Excellence Framework in 2014.
Research Excellence Framework (REF)	This successor to the Research Assessment Exercise was first used in 2014 to assess the impact of research carried out in UK higher education institutions.
Royal Pharmaceutical Society	First established as the Pharmaceutical Society of Great Britain (PSGB) in 1841, this national membership, examinations and regulatory body for pharmacy, gained its Royal title in 1988. In 2010, it was de-merged to form the Royal Pharmaceutical Society (RPS) as a voluntary membership body, and the General Pharmaceutical Council (GPhC) to act as the profession's independent regulator.
Teacher-Practitioner	A practising pharmacist who usually works in a shared role between an academic institution and an NHS trust. First developed in the 1980s to encourage greater integration between pharmacy undergraduate education and pharmacy practice.
University College Cardiff (UCC)	The University College at Cardiff was founded in 1883 as part of the University College of South Wales and Monmouthshire. As part of the University of Wales alongside Aberystwyth and Bangor, it gained a charter in 1893 allowing it to award its own degrees. University College Cardiff was established in 1972 as the successor to the University College of South Wales and Monmouthshire. In 1988, it merged with the University of Wales Institute of Science and Technology (UWIST) to form the University of Wales College of Cardiff (UWCC).
University of Wales College of Cardiff (UWCC)	UWCC was established on 26 September 1988 from the merger of University College Cardiff and the University of Wales Institute of Science and Technology.
University of Wales Institute of Science and Technology (UWIST)	UWIST was founded in 1967 as a successor to the Welsh College of Advanced Technology. In 1988 it merged with University College Cardiff to form the University of Wales College of Cardiff (UWCC).
Welsh College of Advanced Technology (WCAT)	The Welsh College of Advanced Technology was founded in 1957 as one of ten Colleges of Advanced Technology around the UK, to provide a renewed focus on vocational education. It was the predecessor to UWIST.
Welsh Committee (later Centre) for Postgraduate Pharmaceutical Education (WCPPE)	The first meeting of the Welsh Committee for Postgraduate Pharmaceutical Education was held in 1979. The committee was government funded and based at the school, with a remit to rationalise and support continuing education for pharmacists in Wales. On 1 October 2018, Health Education and Improvement Wales (HEIW) was established bringing together WCPPE with the Wales Deanery and NHS Wales's Workforce and Education Development Services.
Welsh Pharmaceutical Students' Association (WPSA)	The school's student association's founding date is unknown, but it was definitely formed by 1930 when its coat of arms was designed by J. Malcolm Davies.

Heads of School

Thomas Lewis
1919-1929

Rees Vernon Lloyd
1929-1967

Archie Cook
1967-1978

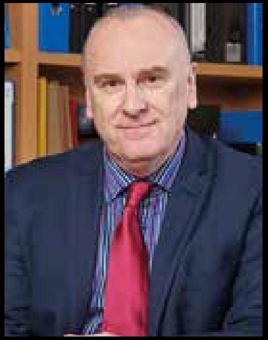


Paul Spencer
1978-1997

David Luscombe
1997-2003

Stephen Denyer
2003-2010

Gary Baxter
2010-2017



Mark Gumbleton
2017-

Pharmacy qualifications and courses

Background	The founding of the Pharmaceutical Society of Great Britain (PSGB) in 1841 marked the beginning of qualifications relating specifically to pharmacists in Great Britain.
1841	Two exams established: • the **Minor Examination**, a rudimentary qualification for pharmacists' employed assistants. Successful candidates could become associate members of the Pharmaceutical Society. • the **Major Examination**, intended for established business owning pharmacists who were, or who aspired to be, members of the Society. Successful candidates were called Pharmaceutical Chemists, and could become full members of the Pharmaceutical Society. Neither exam was compulsory in order to practice as a pharmacist.
1864	The PSGB created a new **Modified Examination**, first held on 26 October 1864. It was intended for established chemists who wanted to codify their educational standing. Candidates had to have been engaged in business for at least 5 years, or be at least 30 years old.
1868	The Pharmacy Act of 1868 required that *all* individuals dealing in or compounding medicines containing poisons must register with the PSGB in order to practise. The Act stipulated that the **Minor Examination** was to become the legal minimum requirement for new entrants to the profession. Successful candidates were called Chemists & Druggists. The **Major Examination** remained for those wanting to achieve a higher academic level, and successful candidates were still known as Pharmaceutical Chemists. For a limited period after the Act, pharmacy assistants who had been working for three years or more prior to 1868 were able to take a special **Modified Examination** qualifying them as a Chemist & Druggist.
1919	**Pharmacy education in Cardiff** When the School of Pharmacy in Cardiff was founded in 1919, the first exams it offered were the PSGB **Minor Examination**, now also known as the **Qualifying Examination**, and the Society of Apothecaries' **Assistant's Examination**. The **Assistant's Examination** was a qualification for assistants or dispensers, which had been established by the Society of Apothecaries after the Apothecaries' Act of 1815. The course comprised pharmacy, *materia medica* and chemistry, and was less academic than the PSGB qualifications, especially for students who did not aspire to own their own business. The **Qualifying Examination** was split into 2 sections from 1920: pure science (chemistry, physics and botany) and an applied pharmacy section (materia medica, pharmacy including posology [study of dosages], the translation and dispensing of prescriptions, and poisons laws.) It was possible to take the parts together or separately. The curriculum for the exam was fixed. Students also had to attend approved courses of instruction in order to enter the exam, and an apprenticeship of 4000 hours was essential. This could be served either wholly in retail, or half and half in retail and a hospital setting.

1922	The **Institute of Chemistry** recognised the School meaning that students passing Part I would be exempt from the Institute's exams in those subjects.
1923	The School offered the PSGB **Major Examination** course for the first time. The first students to successfully pass the exam were announced in 1925.
1925	The PSGB School of Pharmacy was formally recognised to teach a two year **Bachelor of Pharmacy degree course** from 1 January 1925, as a school within the University of London's Faculty of Medicine. The degree course was approved by the PSGB for registration as a Pharmaceutical Chemist, subject to a test in forensic pharmacy. Part I of the Qualifying Exam became the **Preliminary Scientific Examination**. It included practical exams in physics and botany. Part II became the **Chemist & Druggist Qualifying Examination**. Students were not allowed to enter for Preliminary and Chemist & Druggist exam at same time. The Major exam became the **Pharmaceutical Chemist Qualifying Examination**. The Pharmaceutical Chemist exam now had a compulsory course of study. A student could enter for this exam without passing the Chemist & Druggist exam if they had attended an approved course over 2 years after passing the Preliminary exam. Written exams were instituted in all subjects, and practical exams were required in all subjects apart from forensic pharmacy. Oral exams were discontinued, apart from the pharmacy paper for the Chemist & Druggist qualifying exam.
1927	The Technical Colleges of Cardiff, Glasgow, Nottingham and Portsmouth were approved by the University of London and the PSGB for the **external London BPharm**.
1929	The School established an optional course leading to a PSGB qualification in **Bacteriology**, based at the Cardiff and County Public Health Laboratory.
1933	The School offered **Pre-Medical and Pre-Dental courses** in Biology, Physics and Chemistry, for students wanting to go on to study Medicine and Dentistry at degree level.
1934	A new part-time **diploma course in Bio-Chemical [sic] Analysis** was established, to be hosted in the medical unit at the Welsh National School of Medicine in Cardiff Infirmary.
1935	The PSGB syllabus for the **Qualifying Exam** was changed at a national level to include Physiology, and a practical exam in Pharmacognosy. Physiology was also introduced into the Chemist & Druggist and Pharmaceutical Chemist exams, Botany was discontinued and Pharmacognosy was reduced. The subjects for the Pharmaceutical Chemist qualification were therefore altered to be Pharmaceutical Chemistry, Pharmacy, Physiology, Pharmacognosy and Forensic Pharmacy, which meant a more vocational content. It also allowed the first year of the higher course to be assimilated into the Chemist & Druggist course.

1936	The *Baccalaureus in Pharmacia* (BPharm) **degree** was established by the University of Wales, and first offered in the academic year 1937-38. The course consisted of two parts over three years: the Preliminary which had to be taken over not less than one year, followed by the Final over not less than two years. For the Preliminary part, students had to take Physics, Chemistry, Botany and Zoology. The Final part of the course was studied in conjunction with the Welsh National School of Medicine over two years. Fifteen per cent of the course was spent with the medical students, and 85% in the Welsh College of Pharmacy. The final university exams were in Pharmaceutics, Bacteriology, Pharmacognosy, Pharmaceutical Chemistry, and Pharmacology (including Histology, Bio-Chemistry [sic], and Applied Physiology).
1938	Special **part-time courses** in Pharmaceutical Analysis, Biochemical Analysis, Bacteriology and Microscopy of Foods and Drugs “can be arranged.”
1942	The School introduced an **MPharm in Research**, the first such degree in Great Britain. Cardiff was followed shortly afterwards by Nottingham and London Universities. The regulations required that the research area must be one of the Final Exam subjects within the BPharm.
1940s	The School continued to offer **evening classes** in Chemistry, Physics and Biology, and part-time day courses in Biology, Chemistry, Pharmaceutical Chemistry and Dispensing.
1949	The School ceased to offer the **external London degree** alongside the BPharm (Wales).
1953	The Pharmacy Act of 1953 introduced the **Pharmaceutical Chemist’s Diploma** as the new single professional qualification for pharmacists. The last Chemist & Druggist exam was held in 1954. Newly qualified pharmacists registering from 1954 having passed the Diploma or the BPharm degree were required to complete one year of practical preregistration training after their course, unless they had already served a two year apprenticeship before they started at the School.
1957	In 1957, the entrance requirements for the **Pharmaceutical Chemist exam** were brought into line with universities, and a 3 year course was established to start in 1958.
1959	The Apothecaries’ Hall dispenser’s course was discontinued at the School.
1961	**“Extension courses”** on pharmacology were organised by the PSGB Cardiff Branch and held at the School on Thursday evenings.
1962	The School was recognised by the University of Wales as a place of research for the degree of **Doctor of Philosophy (PhD) in Pharmacy**.
1963	A new course on Radioactivity and the Pharmacist was launched, to run over 6 weeks on Thursday evenings, with a fee of £1 10s (£1.50) for the full course.

1967	It became compulsory for all new pharmacists to obtain a pharmacy degree, followed by a year's practical preregistration experience, in order to register. This marked the end of the Pharmaceutical Chemist Diploma.
1968	The **Bachelor of Pharmacy Degree with Honours** was introduced to replace the BPharm degree and PSGB Diploma taught side by side. The new degree allowed for specialisation in the final year for the first time.
1969	Short courses in **Hospital Pharmacy** and **Veterinary Pharmacy** were introduced.
1970	Dr Tony Armstrong supervised the first **week-long veterinary pharmacy course** jointly organised by the School and Monmouthshire College of Agriculture at Usk.
1971	The final exams for the **Pharmaceutical Chemist Diploma** were held in Cardiff.
1972	First of a popular short course **"Preparations for the hair"** was run by the School. A **postgraduate course for general practice pharmacists** attracted 46 delegates. A new **MSc** with options in Cosmetic Science, Applied Pharmacology, Forensic Science and Pharmaceutical Analysis was launched.
1978	The School first offered a course for physicians employed in the pharmaceutical industry to sit the Royal College of Physician's **Diploma in Pharmaceutical Medicine**. It was a two year part-time programme run in conjunction with the British Association of Pharmaceutical Physicians, and attracted around 100 delegates both British and European through the 1980s and into the early 1990s.
1979	The first **Welsh Committee for Postgraduate Pharmaceutical Education** (WCPPE) meeting was held. WCCPE immediately produced a very active programme, with regular events listed in the pharmaceutical press, and a library of published material, references and reports, tape slide packages and videos established for Welsh pharmacists to borrow.
1982	A **Postgraduate Diploma in Clinical Pharmacy** for junior hospital pharmacists was established by the School, jointly with the Southern Derbyshire Health Authority. It was the first postgraduate qualification in clinical pharmacy in the UK. Part-time diplomas in Clinical Science (with the Association of Clinical Research Associates to the Pharmaceutical Industry) and in Regulatory Affairs (with the British Institute of Regulatory Affairs) were introduced in this period.
1991	A new **BSc in Neuroscience with Honours** was advertised by the School.
1993	A **Diploma in Community Pharmacy** was introduced.
1995	The Clinical Pharmacy course was also offered as a part-time MSc, in partnership with hospitals in Oxford, Bradford, Airedale, Cardiff and Wrexham.

1997	All British pharmacy degrees required a **four-year course of study** for the MPharm from this date.
2002	By 2002, the postgraduate taught courses consisted of modular diplomas and MScs in both Community and Clinical Pharmacy for pharmacists working in accredited hospitals. The Community Pharmacy diploma was four modules each year for two years, with an associated study weekend in Cardiff for each module. To extend this to the Masters course, a third year research-based module and dissertation on practice-based research was required. The modules could also be taken as stand-alone units. The Diploma in Clinical Pharmacy consisted of 12 modules which could be taken over 2 or 3 years, with the Masters course adding an additional year to undertake a practice-based project.
2004	New courses introduced for **Prescribing for Pharmacists and Nurses**. The School also offered a new modular portfolio course to support pharmacists to achieve accreditation for Medicines Use Reviews and Enhanced Level Services.
2007	**MSc in International Pharmaco-economics and Health Economics** was established as a collaborative programme between Cardiff University and Hochschule Fresenius, available as a part-time or full-time course delivered wholly in Germany. A new postgraduate certificate in **Non-Medical Prescribing** was established.
2009	In 2009, the first students graduated with an MPharm degree awarded by Cardiff University. In the same year, the School established two collaborative undergraduate programmes with Taylor's University College (now Taylor's University) in Selangor, Malaysia, close to Kuala Lumpur.
2017	**MSc in Cancer Biology and Therapeutics** introduced.

Parent bodies

Cardiff Technical College	1919 – 1951
Cardiff College of Technology and Commerce	1951 - 1957
Welsh College of Advanced Technology	1957 - 1967
University of Wales Institute of Science and Technology	1967 - 1988
University of Wales College of Cardiff	1988 - 2004
Cardiff University	2004 -

Further reading: some thoughts

There has been very little written about the history of the school or about pharmacy in Wales. Original sources survive in archives and libraries that have collections related to the history of Cardiff or of Cardiff University, or in private hands.

As the school has had a number of parent bodies, the institutional collections are dispersed with important materials at Glamorgan Archives and at Cardiff University Special Collections and Archives. These include prospectuses, minutes, annual reports, the University of Wales Calendars, and more visual material including photographs, floor plans and a very comprehensive inventory (see pages 42-3). Glamorgan Archives also holds documents relating to significant Cardiff pharmacist, Robert Drane.

The key primary sources for events and comment on the history of the pharmacy profession are its two main journals. From 1841 *The Pharmaceutical Journal* provided both official notices, educational updates and Pharmaceutical Society reports alongside scientific papers, letters and commentary. Since 1859, an alternative viewpoint has been provided by *The Chemist and Druggist*. Both journals' annual educational listings and later educational supplements are particularly useful. Welsh newspapers such as the *Western Mail* and *The Cambria Daily Leader* have sporadic mentions of the Welsh school and the broader pharmacy profession.

I am grateful to have been provided access to materials still in private hands including a minute book of the South Wales and Monmouthshire Pharmacists Local Associations Federation 1920-22, a range of exam papers, and historical copies of the school's student magazine, *Pharmag*. The current Welsh Pharmaceutical Students' Association officers also kindly gave me access to their historical minute books.

The existing published history of the school exists in a small number of articles, the official programme to mark the opening of the New Building (now Redwood) in June 1961, and a pamphlet produced for its 90th anniversary entitled *Celebrating over 90 years of pharmacy education and research*. Particularly helpful are:

- Anon. The Welsh College of Advanced Technology, Cardiff. *Pharmaceutical Journal*. 1 July 1961: 13-18
- Turner, T. D. The Welsh College of Pharmacy. *The Chemist and Druggist*. 8 May 1965: 476-7
- Spencer, P.S.J. Pharmacy Education in Wales. *Pharmaceutical Journal*. 14 July 1990: 67-8
- Denver Russell, A., Turner, T.D. & Armstrong, N.A. The Welsh School of Pharmacy. *Pharmaceutical Journal*. 12 October 1996: 520-24

Since 2011 the school's alumni magazine *Script* has provided a useful record of activities and events.

Readers interested in discovering more about the wider Welsh and Cardiff context for pharmacy and education can be found in these publications:

Burnby, J.G.L. Robert Drane: no ordinary pharmacist. *Pharmaceutical Historian* 1984; 14(4): 3-6

Collins, S. 'Cardiff University: a patchwork of predecessors', 29 January 2016 http://blogs.cardiff.ac.uk/cuarm/cardiff-university-a-patchwork- of-predecessors/

Dray, J. 'Access and learning for all: University College of South Wales and Monmouthshire in the 1880s (part 1)', 28 May 2015 http://blogs.cardiff.ac.uk/cuarm/accessforallp1/

Collins, S. 'Access and learning for all (part 2)', 8 June 2015 http://blogs.cardiff.ac.uk/cuarm/accessforallp2/

Thomas, P.H. Medical Men of Glamorgan: Professor Theophilus Redwood (1806-92). *Glamorgan Historian*. 1969, volume III: 89-106

Williams, C. Our history and our future. *Cardiff Connect*. Autumn 2015: 8-14

Withey, A. *Physick and the Family: Health, medicine and care in Wales c. 1600-1750*. Manchester: Manchester University Press, 2012.

For a broader understanding of the history of the pharmacy profession and pharmacy education, these publications may be helpful:

Anderson, S. ed. *Making Medicines*. London: Pharmaceutical Press, 2005.

Bell, J., Redwood, T. *Historical Sketch of the Progress of Pharmacy in Great Britain*. London: Pharmaceutical Society of Great Britain, 1880.

Earles, M. Pharmacy and Education 1841-99. *Pharmaceutical Historian*. 1997; 27(4): 42-45.

Earles, M. The development of pharmacy education. In Anderson, S. ed. *Making Medicines*. London: Pharmaceutical Press, 2005: 97-113.

Holloway, S.W.F. *The Royal Pharmaceutical Society 1841-1991: a political and social history* London: Pharmaceutical Press, 1991.

Hudson, B.E. and Boylan, M. *The School of Pharmacy, University of London. Medicines, Science and Society, 1842-2012* London: Academic Press, 2013.

Saville Peck, E. A Survey of Pharmaceutical Education from 1910. *Pharmaceutical Journal*. 4 May 1935

Tallis, N., and Arnold-Foster, K. *Pharmacy History: a Pictorial Record*. London: Pharmaceutical Press, 1991.

Acknowledgements

Researching and writing this book would not have been possible without support from a large group of people. My thanks to:

- Christie Conlon for her gorgeous design and endless patience and to Jolie Skeates for her assistance in completing the project.
- current staff and students at the School, notably Gary Baxter, Jo Blankley, James Birchall, Tony Campbell, Sarah Daly, Lizanne Duckworth, Julia Farnham, Mark Gumbleton, Justine Jenkins, Dai John, Sheila Stockman, and Rhys Thomas.
- colleagues in the wider University and Cardiff community including Chris Williams, staff at Glamorgan Archives, Alan Hughes and his team at Cardiff University Archives and Special Collections, especially Anna Sharrard and Alison Harvey, and Samantha Heale at The Museum of Cardiff
- everyone who provided images for reproduction particularly Margaret Bear, Derek Elliot (Aerial Photographs Officer, Welsh Government), Roger Gilbert (Cardiff Philatelic Society), Mike Hall (photographer), Andy Kendall (Cardiff Naturalists Society), Zara Robinson (Pharmaceutical Journal) and James Waldron (Chemist+Druggist)
- John Betts, Matthew Johnson, Peter Homan, and Jane Trodd at the Royal Pharmaceutical Society Museum and Library; Janet Payne, Archives Officer, at the Worshipful Society of Apothecaries; and Michelle Wake, Senior Librarian, UCL School of Pharmacy Library
- and most importantly past students and staff for sharing their histories, particularly Michael Allwood, Tony Armstrong, Jean Barr, Philip Boyle & Mrs Margaret Skinner, Teresa Clark (Jones), Paul Cooke, Graham Davis, Malcolm Davies, Marshall Davies, Dan Ellesmere, Shivaun Gammie, Allan Jones, Brian Jones, Caryl Kelly, Madeleine Keyworth (Connor), Ed Lindup, David Llewellyn, Joan Mawson (Hutchinson), Mike Mitchell, Michael Norris, Roger Pickett, Neela Prabhu (Karve) Jaimie & Nichola Rees, David T. Rogers, Lorna Speid, Kristine Spicer (Lewis), Barbara Stewart (Roberts), Annette Taylor (Scrivens), Glyn Taylor, Liz Unser (Jones), Chris Wainwright, Colin Ware, David Williams, Steve Williams, and Liz Worthing (Crockett).

About the author

Briony Hudson is a freelance museum curator, pharmacy historian and lecturer. She first became associated with the School when, as Keeper of Museum Collections at the Royal Pharmaceutical Society, she provided professional support for the Turner Collection. She was appointed Honorary Lecturer in 2012. She is a past Chair of the London Museums of Health and Medicine network, a past Chair of the Social History Curators Group, a past President of the British Society for the History of Pharmacy, and current President of the Faculty for the History and Philosophy of Medicine and Pharmacy at the Worshipful Society of Apothecaries of London.

I would like to dedicate the publication to Professor Terry Turner (1929-2019) whose long association with the School began as an undergraduate in 1951. His passion for pharmacy, education and history was unrivalled and infectious, and his enthusiasm, story-telling and generosity contributed considerably to my research.

With his donation of the Turner Collection to the University in 2009, he has left a significant and fitting legacy.

Index

Numbers in bold indicate an illustration
Numbers underlined indicate a biography box

A

Abidi, Mandana **86**
Accommodation 58, 77, 104, 129
Air raids 46 - 47, 48, 58
Aldred, Harold 23, 30, 54
Allen, Margaret 132
Allwood, Mike 88, 104, 110, 116
Allan, Paul **120**
Alumni **130**
Anniversary
  75th **133**
  90th 139
Apothecaries 6-8, 144
Apothecaries Act (1815) 22
Apothecaries' Hall examination 18, **22**, 23, 25, 27, 51, 55, 144
Applied Biology department 67, 82, 101
Applied Chemistry department 33, 67
Applied Pharmacology 75, 77, 86, 93, 94, 98, 102, 116
Apprentice 10, 12, 13, 14, 22, 24, 25, 26, 29, 35, 36, 37, 52, 113, 144
Armstrong, Anthony (Tony) **84**, 97, 98, 113, 114, 138
Arnall, F. W. 33
Aseptic laboratory 55, 73, 96, 101, **123**
Askam, Vernon **84**
Assembly Hall 38, 67, 72, 73
Athena Swan 126

B

Bachelor of Pharmacy (BPharm) degree
  London **34**, **37**, 51, 63
  Wales 34, **51**, 52, 56, 61, 62, 63, 82, 88
  with Honours 90, 91, 94, 96, **114**
Bacteriology 23, 28, 29, 32, 35, 39, 48, 53, 56, 88, 89, 98, 107
Bailey, David **84**, 99, 113, 116
Bainbridge Copnall, Edward 79
Balls 39, 86, 104, **107**, 109, **122**, **129**, **131**
Barnett, Mike **84**, 97, 98, 108, **114**, 138
Barr, Jean 58
Barr, Mike **84**
Baxter, Gary 125, 134, **135**
Berry, Harry 48, 54
Biochemical Pharmacology 85
Biochemistry 52, 53, 86, 88, 89, 94
Biochemical analysis, Diploma in 29
Bloomsbury Square 7, **10**, 12, 48
Bombing **46**, 46-47
Botany 11, 12, 14, 20, 21, 22, 23, **24**, 25, 28, 29, 30, 31, 35, 36, 52, 53, 88, 94
Bowman, Ralph **96**
Boyle, Edward Sir **62**
Brain, Keith **86**, 103, 124
Branch, Pharmaceutical Society 34, 36, 39, 50, 54, 55, 56, 62, 101, 112, 114
Brierley, Eric 96
British Pharmaceutical Conference (BPC) 12, **14**, 27, 33, 36, 37, 56, 71, 87, 92, 98, 99, **106**, 112, 138
British Pharmaceutical Students' Association (BPSA) 58, 106, 107, 108, **110**, 110-11, **111**, 112, **130**, **131**, 144
Broadley, Ken 86
BSc degrees 34, 94
Bugajski, Joshua 130
Burton, Jonathan **124**
Bute, Marquis of 6, 63
Bute Street **6**, 13, 15, 17, 24, **46**

C

Campbell, Anthony (Tony) **99**
Cancer Biology and Therapeutics 132
Cardiff College of Technology and Commerce **61**
Cardiff and District Chemists' Association 10, 15, 18, 36, 37, 39, **113**
Cardiff Naturalists' Society 15
Cardiff School of Pharmacy and Pharmaceutical Sciences 121
Cardiff Technical College **15**, 19, **20**, 20-23, 25, 26, 27, 28, 30-33, **33**, 34, 35, 36, 38-9, **40**, **41**, 40-43, 46-8, 54, 55, 56, **60**-62
Cardiff University 120-21, 126, 137, 140, 144
Cardiff University Stability Assessment Unit 139
Cardiff and Vale Health Board **125**
Cathays Park **47**, 53, **61**, **63**, 67, **83**, **95**
Chemist & Druggist 6, 8, 10, 25, 27, 29, 34, 50, 63, 144
Chemistry 12, 13, 14, 15, 20-22, 33, 35, 36, 48, 51, 53, 54, 67-79, 82, 88
Chemistry, Institute of 25, 29, 30, 59
Cleary, Pat **84**
Clinical Pharmacy 86-7, 92-3, 94, 96, 97, 99, 116, 122-4, 133
Clinical Research 116, 132
Closed Circuit Television (CCTV) **101-2**
Cockbill, Sarah 112
Coleg Cymraeg Cenedlaethol 127, 144
Coles, Charles 23-5, 30, 34, 40
College of Biomedical and Life Science 121
Colleges of Advanced Technology (CATs) 61-2, **62**, 82
Computers 92, 102, 103, 124, 139
Connolly, Christine **91**
Continuing Education 77, 112, 113-16, 132
Continuing Professional Development (CPD) 132
Cook, A. M. **84**, 86, 87, 91, 92-3, 97, 106, 113
Cosmetic Science 116
Courses 148-52
  Undergraduate 34-5, 51-3, 88- 95, 122-25
  Postgraduate 56, 91, 92-3, 114-6, 132
Crabbe, Alan **90**

D

Dance 38, 39, 48, 104, 106, 107, 108
Davies, Dan Douglas **49**
Davies, Malcolm **39**, **53**, 97
Davies, J. Malcolm 23, 30, 32, 35, 39, 53, 54, 56, **85**, **89**
Davies, Marshall 62
Dean 26, 39, 48, 82, 83, 86, 87, 94
Debating society 38-9, 58, 104
Deeks, Hugh **84**
Degree 35-6, 52-3, 62, 77, 82, 88-91, 94
Denver Russell, Allan 98
Denyer, Stephen 133, **134**
Diplomas
  Biochemical Analysis 28-9
  Clinical Pharmacy 116, 132

  Clinical Science 132
  Community Pharmacy 132, 133
  Hospital Pharmacy proposal 113
  Pharmaceutical Chemist 35, 51-2, 77, 82, 88-90
  Pharmaceutical Medicine 116
  Regulatory Affairs 132
Dispensary 32, 48, **123**
Dispensing 19, 20-21, 22, 32, 35, 39, 40, 42, 48, 51, 53, 55, 73, 84, 88, 101, 102
Doctorate 96
Drane, Robert **6**, 10-13, **13**, 14, **15**, 55
Duke of Edinburgh 67
Dyer, Fred J. **30**, 39

E

Edinburgh, Duke of **67**
Education and Students Office 137
Eistedfodd 104, 106, 140, 144
Ellesmere, Dan **140**
Empire Games 58-9
Engagement 140
Erasmus exchange scheme 126
Evacuation of London colleges during Second World War 47-9
Evening classes 12, 14, 22, 29, 36, 51, 113
Examinations
  Apothecaries' Assistant 22, 27
  BPharm 34-5, **37**, **51**, 52, 90
  Institute of Chemistry 25, 29
  Major 6, **12**, 25, 26, **27**
  Minor 6, 8, **12**, 14, 20, 25, 27
  Qualifying 18, 20-22, **21**, 25, 29, 48, 50, **52**, 88, 145, 146
  papers **37, 51, 52, 91, 92, 94, 124, 127**
  Preliminary 10, 24, 27, 36
  results 23, 26, 27, 63, 123, 124-5
Examiners 19, 22, 30, 35, 36, 46, 52, 54, 77, 88, 94, 116
Exchanges **126**

F

Facilities 30-33, 42-3, 54, 101-2, 136-7
Faculty of Health and Life Sciences 120
Fees 22, 25, 26, 28, 29, 34, 51, 124
Fellows of the Pharmaceutical Society 50, 54, 55, 86, 98, 112, 114
Female pharmacists 10, 22, 51, 112
Female students 20, 22, 51, 57, 88, 104, 126
First World War 15, 19, **70**
Fishburn, Arthur 35, 56, **57**
Football 38, 39, 54, 58, **110**, 111, **131**
Forensic Pharmacy 25, 29, 35, 84, 89, 112, 116, 144
Frieze **78, 79**
Funding 18, 87, 97-100, 102, 122,133, 138-40
Furr, Jim **110**

G

General Pharmaceutical Council 120, 144
Gilmour-White, Susanna **96**
Glaxo 51, 55. **57**, **90**
Glyn-Jones, Sir William 18, 20, 24, 25, 36
Good Manufacturing Practice suite 137, 139
Graduation 35, **88, 104, 125, 128, 137**
Grants 19, 23, 25, 35, 97-100, 114
Greenhouse **75**, 76
Gumbleton, Mark 134, 141

H

Hadgraft, Jonathan 87
Hagon, Albert **18**, 24, 36, 37
Hagon medal 35, 37, 55
Harcombe, Philip John **53**
Harrison, Ivor **53**
Halls of residence 58, 77, 104, 113, 129
Hang-gliding **110**
Hawkins, Jenny 130
Health Education and Improvement Wales (HEIW) 132, 144
Henney, Neil **139**
Heycock Hall 129
Higher Education Funding Council for Wales 123
Highfield, Fred 20, 22, 23
Histology 35, 53, 88, 144
Hospital pharmacy 21, 88, 92, 94, 96, 113, 114, 116
Hutchinson, Joan **88**

I

Ife, University of (Nigeria) 84, 97, 113
Independent prescribing 132
Ingram, Jack **84, 90**
Institute of Chemistry 25, 29, 30, 59
International Pharmaceutical Students' Association **106**
International students 88, 94, 123
Interprofessional learning 121
Inventory 42-3, **43**

J

Jaglin, Stéphane 126
James, Dinah Mary 56
James, Ken **56**, **84**, 96, 97, 98
John, Dai **106**, 112, **123**, **126**
Jones, Allan **105**
Jones, Arwyn T. **140**
Jones, Brian 53, **54**, 58, **59**, 67, 77, 88, 104
Jones, Sian **86**
Jones, Llewellyn Loveday 40, **84**

K

Kellaway, Ian 87, 99, 116, 138
Kidd, Emma **140**
Kuwait 126

L

Laboratory 32, 33, 34, 48, 70, 72, **100**, 101, 102, **138**
  Aseptic 55, 73, 101
  Biology 32, 33, 42
  Cardiff and County Public Health 28
  Chemistry 32, 54
  Dispensing **19**, 32
  Manufacturing 32, 33
  Microbiology 53, **94**, **98**
  Pharmaceutical 33, 42
  Pharmaceutical Chemistry 72
  Pharmaceutical Technology **74**
  Pharmaceutics 86
  Pharmacognosy 33, 42, 43, **68-9**, 70, 75, 85, 89, **101**, **102**
  Pharmacology 75, 101, **102**
  Pharmacy Practice 102
  Radiochemistry 72
  Research 32, 33, 42
  Sterile products 73
Lane, Emma **140**
Lecture theatre 32, 70, 75, **87**, 100, 101, **132**, 137
  Pharmacy Lecture Theatre (PLT) 72, 137
  Vernon Lloyd Lecture Theatre 32, 84, 137
Lewis, Thomas **19**, 23, 27, 30, 34, 39
Library 14, 15, **25**, 29, 33, 42, 47, 77, 104, 116
Liverpool School of Pharmacy 12, 34, 36, 106
Lloyd, Rees Vernon **32**, 35, 39, 40, 47, 50, 51, 54, 56, 61, 67, 82, **84**, **107**, 112, **136**
London BPharm degree (external) 34, 37, 51, 63

London University 34, 35, 37, 47, 54, 110
Luscombe, David 98, 112, **133**, **134**
Lyn y Fan Fach **7**

M

McGuigan, Chris **136, 137**
Machinery **42**
Major examination 6, 12, 25, 26, **27**, 144
Mangan, J. 30-31, **31**, 54
Maplethorpe, Cyril W. 50, 52, 62, 92
Maritime Studies department 67, 82
Martin, Peter **97**
Martindale, William **14**
Master of Pharmacy (MPharm)
    by research 56, 96, **114**
    four year degree 123, 126
Masters courses
    Applied Pharmacology **114**, 116
    Cancer Biology and Therapeutics 132
    Clinical Pharmacy 132
    Clinical Research 132
    Community Pharmacy 132
    Cosmetic Science **114**, 116
    Forensic Science **114**
    International Pharmaco-economics and Health Economics 132
    Pharmaceutical Analysis **114**
Materia medica (see also Pharmacognosy) 12, 14, 20, 21, 22, 32, 34, 40, 50, 145
Medal 18, 35, 36, 37, 55, 56
Medicines Act 1968 92
Medicines Research Unit 87, 99, 116, 138
Medicines Use Reviews 132
Microbiology 50, 53, 55, 56, 77, 88, 89, 92, 94, 98, 145
Microscopy 23, 25, 29, 42, 70, 96, 97, 101, 102
Milroy, Samantha 129
Minor examination 6, 8, 12, 14, 20, 25, 27, 145
Modules 122-4, 132
Murray, Lina Mary **24**
Myddfai, Physicians of 7

N

National Health Service 50, 92, 120
National Insurance Act (1911) 21
National Student Satisfaction Survey 124
Navigation department 67, **70**
New Building 62-3, 65-79, **66**, 83, 100, 101-2
Nicholls, Paul 32, **84**, **85**, 97, 98, 99, **128**, **134**, **136**
Nicholls, Rosemary **136**
Nicholson, Robert 136
Nuffield Report 96, 116, 122, 123
Nwajiobi,Emeke **111**

O

O'Brien, Cath 132
Objective Structured Clinical Exams (OSCEs) 124
Old Students' Association see also Welsh School of Pharmacy Past Students' Association (WSPPSA) 19, 40, 58, 84
Optometry, School of 137

P

Parish, Peter 86, **87**, 92, 93, 94, 99
Park Hotel **38**
Parke Davis 26, **90**, **96**, 113
Part-time courses 18, 22, 23, 28, 29, 37, 51, 62, 116
Past Students' Association see Old Students' Association and Welsh School of Pharmacy Past Students' Association 112
Pharmabees **140**
Pharmaceutical Analysis 29, 116
Pharmaceutical Chemist 6, 10, 13, 25, 26, 29, 35, 48, 50, **52**, 63, 145
Pharmaceutical Chemist Diploma 35, 52, 77, 88, 89, 90
Pharmaceutical Chemistry 12, 29, 30, 35, 48, 51, 53, 57, 72, 77, 87, 88, 89, 94, 96, 97, 101, 122, 133
Pharmaceutical Journal 12, 14, 18, 33, 35, 36, 38, 40, 47, 52, 58, 70, 71, 72, 73, 77, 82, 92, 96, 101, 102, 113, 122, 125, 138
Pharmaceutical Society of Great Britain (PSGB) 6, 7, 8, 10, 11, 14, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 34, 36, 39, 47-8, **48**, 50, 51, 52, 54, 55, 56, 62, 63 67, 71, 82, 84, 88, 91, 92, 96, 97, 101, 106, 112-14, 145
Pharmaceutical Technology 73, **74**, 88, 93, 114
Pharmaceutics 30, 34, 35, 39, 48, 51, 56, 73, 77, 84, 85, 86, 87, 88, 89, 94, 96, 101, 114, 116, 122, 139, 145
Pharmacognosy (see also materia medica) 29, 33, 35, 39, 42, 43, 48, 52-3, 55, **68-9**, 70, 72, 75, 76, 77, 85, 86, 88, 89, 94, 96, **100**, 101, 102-3, 123, 145
Pharmacology 29, 34, 35, 48, 52, 53, 56, 75, 77, 85-6, 87, 88, 89, 91, 92-3, 94, 98, 101, 102, 113, 116, 122, 124, 133, 135, 137, 139, 145
Pharmacy Advisory Committee 18, 19, 23, 24, 36, 37, 63
Pharmacy and Poisons Act 1868 10, 12, 50
Pharmacy and Poisons Act 1908 50
Pharmacy and Poisons Act 1933 28
Pharmacy Act 1953 50
Pharmacy Act 1954 50
Pharmacy Practice 22, 91-3, 96, 99, 102, 139
Pharmag **107**, 107–108, 110, 111, 130
PhD 56, 96, **98**, **114**, **132**, 138-40
Physics 15, 20, 21, 22, 23, 25, 29, 30, 35, 36, 51, 52, 67, 82, 88, 94
Physiology 29, 35, 48, 51, 52, 53, 56, 77, 86, 87, 89, 94, 101, 145
Phytopharmacy 85, **94**, 97, 145
Placements 125, 127
Poisons 6, 12, 20, 21, 28, 42, 48, 50, 97
Posology 20, 145
Postgraduate diploma in Clinical Pharmacy 116, 132
Postgraduate education 56, 72, 77, 86, 91, 92-3, 96, 99, 112, 114, 116, 132, 138
Prabhu, Neela 128
Preliminary Examination 10, 24, 27, 36
Preliminary Scientific Examination 25, 27
Prescribing 39, 100, 132
Prescriptions 12, 20, 21, 28, 102, 120
Prizes 25, 26, 37, 58, 91, 108, 110
Professors 10, 14, 82, 84, 85, 86, 87, 98, 99, 133
Prospectus **20**, 21, 22, 25, 28, **29**, 36, 38, 46, 58, 62, 88, 94, **95**, 101, 104
Public engagement 140
Pugh, John **96**

Q

Qualifying Examination 18, 20-22, 25, 29, 48, 50, 52, 88, 145, 146
Queen Elizabeth II, Her Majesty **136**
Queen Street 6, 10, **11**, 15, **38**, 39, 59, 104, 105, 107, 108

R

Rag activities 38, **59**, 104, **105**, 129
Radioactivity 101, 113
Rawlings, Marion **51**
Redwood, Theophilus 10, 14, **71**, 77, **136**
Redwood, Boverton Thomas (Sir) **77**
Redwood Building **63**, **64**, **65**, 65-79, 84, 88, **120**, **121**, 136-7
Rees, Gillian 58-9, **59**
Rees, Jaimie 49
Rees, Margaret 67, **84**, 96
Refectory 71, 72, 106, **128**

Research, MPharm by 56, 96
Research activities 26, 32, 42, 56, 75, 96-101, 116, 138-40
Research Assessment Exercise (RAE) 133, 139, 146
Research Excellence Framework (REF) 140, 146
Ringshaw, David **84**
Robbins Report 82
Roberts, Gareth **111**
Robins, David **84**
Rogers, David **98**
Royal Pharmaceutical Society see also Pharmaceutical Society of Great Britain 120, 124, 134, 138, 146
Rudge, Ernest 20, 23, 30, 33, 38
Rugby 39, 48, 56, 58, 104, 107, 110, **111**, 112, **130**
Russell, Allan Denver **84**, **98**

S

St David's Day 38, 39
Sanders, Bruce. A "Sandy" **53**
Saville Peck, Ernest 18, 23, 25, 29, 34
Scholarship 22, 25, 35, 36
School of Health and Life Sciences 87, 94
School of Healthcare Sciences 132
Second World War 46-50, **70**
Senghennydd House 129
Smith, H. John **84**, 96, 99
Social and Professional Pharmacy **124**
Societies 38-9, 58, 102, 104, 106, 108
Society of Apothecaries 7, 18, 22, 23, 25, 27, 51, 144
Songbook **59**
Sophia Gardens **13**
South Derbyshire Health Authority 116, 132
South Wales Federation of Local Associations 18, 23, 24, 34, 36-7, 38
Spencer, Paul **86**, 87, 92, 96, 97, 98, 99, 106, 112, 113, 120, 122-3, **128**, 133, **134**, 137, 138
Sporting activities 39, 48, 58, 107-8, **110-111**, **130**, 130-34
Staffing 19, 20, 23, 30, 31, 54, 77, 82, 84-7, 133
Sterile products laboratory 73
Stone, Linda **112**, 138
Student experiences 38-40, 57-9, 104-111
Students **23, 49, 53, 93, 109, 139**
  numbers 23, 24, 32, 51,77, 88, 94, 123
  international 63, 77, 88, 94, 123, 126
  gender 22, 88, 104, 20, 22, 51, 57, 104, 126
Students' Union 39, 47, 58, 67, 70, 72, 88, 104, **106**, 108, 110
Surgical Dressings Research Unit 55, **97**
Swansea School of Pharmacy **36**
Syllabus 12, 21, 27, 29, 52, 123, 124

T

Taylor's University (College), Malaysia **126**
Teacher-practitioners 96, 134, 146
Technical education 12, 14-15, 19, 61
Technical School 14, 15
Technical College, Cardiff **15**, 19, **20**, 20-23, 25, 26, 27, 28, 30-33, **33**, 34, 35, 36, 38-9, **40**, **41**, 40-43, 46-8, 54, 55, 56, **60**-62
Telemicroprojection 96, **101**, **102**
Temple, David 116, 124, 132
Tenovus Cancer Research Laboratories 116, 136
Therapeutic Substances Act (1925) 28
Thomas, Emma 130
Thomas, George **115**
Thomas, Ifor **84**
Thomas, Meurig **108**
Thomas, Percy (Sir) 67
Timetable **52**, 53, **88**, 91, **124**
Toms, Geof **84, 89**
Traherne Hall 104, 129
Turner Collection 55
Turner, Terry D. 6, 54, **55**, 57, 67, **68-9**, 82, **84**, **89**, **90**, **94**, 97, 98, 101-102, **108**, 112, **113**, 113-4, **122**, **133**

U

University College Cardiff 88, 90, 93, 116, 120, 146
University College of South Wales and Monmouthshire 14, 18, 22, 34-5, 46-7, 55, 84, 107
University Grants Committee (UGC) 96
University of London 34-5, **37**, 47-8, **48**, 61
University of North Carolina **126**
University of Wales 14, 34-5, 46-8, 51, 56, 58-9, **59**, 61-2, 82, 96, 104, 120
University of Wales College of Medicine 120
University of Wales College of Cardiff (UWCC) 114, 120, 146
University of Wales Institute of Science and Technology (UWIST) 82, 90, 92, 94, 99, 101-2, 104, 106, 108, 110-11, 120, 146

V

Veitch, Bryan 134
Veterinary pharmacy 57, 114, 116
Victor Ludorum 110-11, **111**, **130**
Visits 26, 57, 90, 94, 107
Volunteering **125**

W

Wainwright, Chris **110**
Wann, Ken **139**
Wardle, Ross 130
Welsh Assembly 112, 120, 133
Welsh College of Advanced Technology (WCAT) 61-3, 67, 77, 82, 101, 104, 146
Welsh College of Pharmacy 18, 20, 28, 32, 34-5, 37, 38, 48, 51, 61-2, **62**
Welsh Committee/Centre for Postgraduate Pharmaceutical Education (WCPPE) **116**, 132, 146
Welsh Government 132, 133
Welsh language 36, **127**
Welsh National School of Medicine 14, 28, 34, 35, 56, 82, 88, 92
Welsh Pharmaceutical Students' Association (WPSA) **39**, 48, 84, 86, 96, **107**, 107-8, 109, 110-11, **128-9**, **131**, 146
Welsh School of Pharmacy 26, 61, 67, 82, 88
Welsh School of Pharmacy Past Students' Association 111
Whitehall Rooms **38**
Wightman, Sue **84**
Williams, David **140**
Williams, Steve **140**
Williams, Hywel **84**
Women pharmacists 10, 22, 51, 112
Women students 20, 22, 51, 57, 88, 104, 126
Works visits **26**, **57**, **90**, 94, 107
World War One 15, 19, **70**
World War Two 46-50, **70**
Wound Management Research Centre 97

X

Y

Z

Zoology 14, 28, 35, 88, 94

CARDIFF
UNIVERSITY

PRIFYSGOL
CAERDYDD